

PROCEEDINGS OF THE
ENTOMOLOGICAL SOCIETY OF WASHINGTON

VOL. 36

JUNE, 1934

No. 6

A REVISION OF THE GENUS *ANASTREPHA* BASED ON A
STUDY OF THE WINGS AND ON THE LENGTH
OF THE OVIPOSITOR SHEATH (DIP-
TERA: TRYPETIDAE).

BY CHARLES T. GREENE.¹

The two-winged flies of the dipterous genus *Anastrepha*, belonging to the family Trypetidae, are usually referred to as fruit flies because their larvae live in the pulp of fresh fruits. Many of them, such as the Mexican fruit fly (*A. ludens* Loew) and the West Indian fruit fly (*A. acidusa* Walker), infest fruits of commercial value and cause considerable damage. In order to prevent the introduction of such injurious forms into the country, the United States Government has established certain quarantines against fruit flies and the proper recognition of the different species of the genus *Anastrepha* has in consequence become increasingly important. It is hoped that this paper will prove useful in the identification of the species belonging to this genus.

Prof. M. Bezzi, who revised this genus in 1909 (3), included only 20 species; while Dr. Friedrich Hendel, in his revision published in 1914 (14), treated 32 species. The present paper includes 54 species, of which 16 are new to science. Representatives of 45 of these species, including the types of all of the new species described herein, are contained in the collection of

¹The writer wishes to thank the following persons for their assistance in helping to make this revision much more complete than it would otherwise have been: Dr. Friedrich Hendel, for his generous loan of types and type material for study; Dr. H. Zerny, of the Vienna Museum, through Dr. J. M. Aldrich, for the loan of the type of *Anastrepha fraterculus* Wied.; the British Museum, through Dr. F. W. Edwards and Miss Daphne Aubertin, for photographs of Walker's types and notes on them; the Museum of Comparative Zoology, Cambridge, Mass., through Mr. Marston Bates, for the privilege of examining several types of Loew's species; Mr. E. E. Blanchard, Department of Agriculture, Buenos Aires, Argentina, for supplying a copy of an obscure description; and Dr. J. M. Aldrich, for assistance in translations and for helpful suggestions.

Nearly all of the material used in this revision was furnished by the Bureau of Entomology and the Bureau of Plant Quarantine of the United States Department of Agriculture. Messrs. Max Kisliuk, Jr., and C. E. Cooley furnished many specimens which they collected on their fruit fly survey during 1931 and 1932, through the West Indies and South American countries. Several of the species captured by them were new to the U. S. National Collection and some proved to be new to science.

With certain exceptions noted, the photographs of the wings included in this paper are by J. G. Pratt, photographer of the Bureau of Entomology. The pen drawings are by the author.

the United States National Museum, which served as the basis for this revision.

As the writer had an opportunity to examine the types of a great many species of this genus he has been able to record some good characters which were omitted in the original descriptions. These additions are mentioned in separate paragraphs under certain species.

DEFINITION OF TERMS.

The terms used for some of the principal characters in the accompanying descriptions may be defined as follows: (See drawing of wing, fig. 1.)

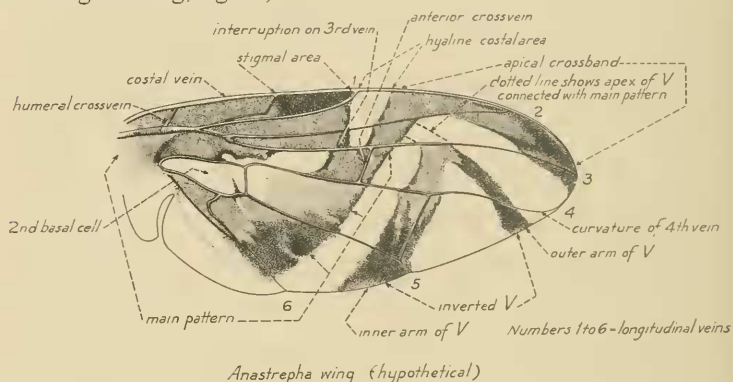


Fig. 1.—Wing of an *Anastrepha*, showing characters.

Main pattern: Includes all the color pattern on the basal two thirds of the wing. There is usually a definite line marking the outer limits of this pattern, extending diagonally across the wing just beyond the anterior crossvein.

Stigmal area: This is the space along the costal or anterior margin of the wing extending from the tip of the auxiliary vein to the tip of the first longitudinal vein and limited posteriorly by this latter vein.

Hyaline costal area: This space begins at the tip of the first longitudinal vein and extends posteriorly across the wing at least to the second and usually to the third longitudinal vein. In some species this area continues beyond the third vein and is continuous with the hyaline area which includes the second basal cell. It is absent in a few species.

Interruption on third vein: This term means that the hyaline costal area is not continuous to the base of the wing to include the second basal cell. The yellow or brown pattern extends across the third longitudinal vein, causing an interruption of the hyaline space at this vein. When the hyaline costal area extends posteriorly from the costal margin to include the second basal cell it is then called "continuous."

Anterior crossvein: A small crossvein near the middle of the wing, on the upper side of the discal cell, connecting the third and fourth longitudinal veins.

Apical crossband: The narrow portion of the color pattern along the apical costal portion of the wing. It is really a continuation of the main pattern and terminates at the margin of the wing between the apices of the third and fourth longitudinal veins.

Curvature of the fourth vein: The apical tip of the fourth longitudinal vein curves upward to the margin of the wing and unites with the tip of the costal vein.

Inverted V: This portion of the pattern is shaped like the letter V inverted. The tips of the arms reach the posterior margin of the wing. The point at which the two arms join is called the apex and is usually at the third longitudinal vein or slightly anterior to this vein. The narrow arm, nearer the tip of the wing, is called the "outer arm"; the broad arm is called the "inner arm."

When the apex of the V is prolonged beyond the third longitudinal vein and connects with the main pattern it is termed "connected" (dotted lines in figure 1 show it connected). When the apex of the V stops at the third longitudinal vein it is termed "disconnected" because a broad hyaline area separates it from the main pattern.

For additional information on characters used in this paper see text figures 1 to 4, inclusive.

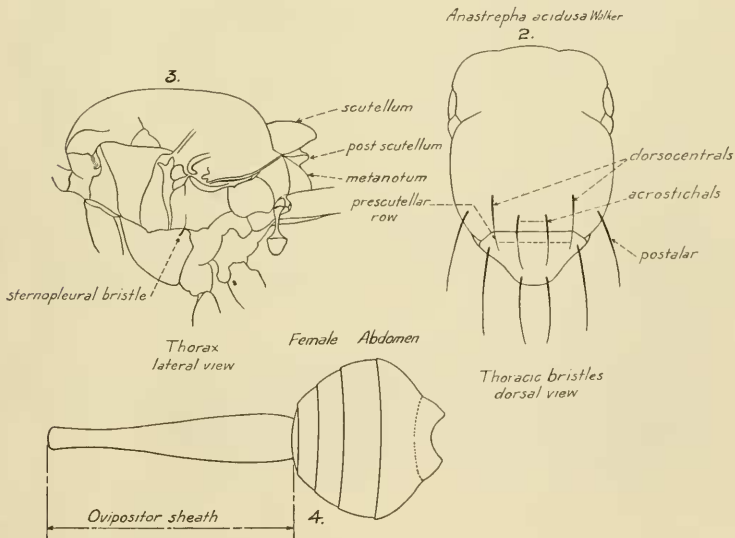


Fig. 2.—Dorsal view of thorax of adult *Anastrepha acidusa*, showing bristles.

Fig. 3.—Lateral view of thorax of adult *Anastrepha acidusa*, showing bristle, scutellum, postscutellum, and metanotum.

Fig. 4.—Sheath of ovipositor of a female *Anastrepha*.

Genus ANASTREPHA Schiner.

Anastrepha was described by Schiner in 1868 (28, p. 263) in his *Reise Novara*, page 263. The genotype is *Dacus serpentina* Wied.

Head hemispherical; eyes bare; front broad, slightly longer than wide; surface of front with numerous very short black setae; a vertical row of large bristles on each side; face vertically impressed on each side beneath the antenna; epistoma somewhat prominent, no vibrissae, mouth opening large; proboscis with large labellae; palpi rather broad; antenna with basal joints short, third joint slender, a little longer than first two together; arista long and slender, microscopically pubescent. Mesonotum slightly convex, with large bristles at the sides and a transverse row anterior to the scutellum; scutellum with four large bristles. Abdomen not much longer than thorax, with five segments; male genitalia somewhat prominent; abdomen of female projecting style-like; this projection or ovipositor ranges in length from two-thirds the length of the abdomen to a length slightly longer than head, thorax, and abdomen together. Legs rather long; front femora bristled below; middle tibiae with apical bristles; metatarsi not shortened. Wings large as a rule, with brown bands; apical portion of auxiliary vein bent forward almost at a right angle, into the costal vein; first and third longitudinal veins setulose; apical portion of fourth longitudinal vein curved up toward the third and joining with the tip of the costal vein; small crossvein beyond the middle of the discal cell; anal cell drawn out to a point on the posterior edge.

This genus is most closely related to *Acidia* and *Hexachaeta*. The scutellum has four large macrochaetae like the former, whereas the latter has six macrochaetae. It differs from both genera in having the apical portion of the fourth longitudinal vein curved forward to unite with the tip of the costal vein. This genus is found only in the western hemisphere and occupies the same position there as the genus *Dacus* occupies in the eastern hemisphere.

For students interested in the genus *Anastrepha* papers by Crawford (7), Dampf (8, 9), Darby and Kapp (10), Greene (13), Isaac (15), Lima (18), Mackie (22), McPhail and Bliss (27), Silvestri (30), and Wille (35) are included in the literature list, although having more of a biological or economic than a taxonomic bearing.

The Aldrich Catalog (1) is listed because the genus *Anastrepha* is mentioned, although at the time this catalog was published there were no species known from the United States.

The article by Bezzi (4) was included but the writer was unable definitely to place the species mentioned.

TABLE OF SPECIES.

Females.

1. Dark brown to nearly black species	2
Yellow species	5
2. Hyaline costal area present	3
Hyaline costal area absent	4
3. Hyaline costal area interrupted just before the third vein; only the inner arm of the V present, beginning near apex of sixth vein, extending upward along the posterior crossvein and ending at the third vein. Ovipositor sheath 3 mm. long. (West Indies, Trinidad, Mexico, Central America, Peru, Brazil, Ecuador).....	
<i>serpentina</i> Wied., p. 142	
Hyaline costal area continuous to the base of the second basal cell; only the inner arm of the V present, connected with the main pattern along the posterior margin of the wing and extending upward along, and ending just beyond the tip of, the posterior crossvein. Ovipositor sheath 3 mm. long. (Ecuador).....	
<i>ornata</i> Aldrich, p. 143	
4. Wing mostly hyaline; a dark brown band along the costa to the tip of the fourth longitudinal vein; a dark brown band from the posterior border following the posterior crossvein to slightly beyond its tip; a dark band from the base of the wing extending to the tip of the sixth vein. Ovipositor sheath 2 mm. long. (Brazil, Paraguay).....	<i>daciformis</i> Bezzi, p. 143
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6. Dorsal markings in the form of a band or stripes.....	7
Dorsal markings in the form of a spot or spots.....	10
7. With a broad, transverse, dark brown band on the posterior margin of the thorax. Hyaline costal area broadly interrupted on third vein; V complete, its apex connected with the main pattern. Ovipositor sheath robust, three-fourths as long as the abdomen. (Mexico, Guatemala, Venezuela).....	<i>robusta</i> , n. sp., p. 144
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- Wing pattern yellow with some brown near base of wing; inverted V with both arms present, mostly brown, disconnected from main pattern. Ovipositor sheath robust, almost as long as the abdomen. (Mexico, Central America, Trinidad, West Indies, Bolivia)..... *striata* Schiner, p. 145
10. With one spot at middle of posterior edge of thorax.....11
- With two or three spots on posterior edge of thorax.....23
11. Hyaline costal area absent; inner arm of V connected at its apex and on the fourth longitudinal vein with the main pattern; outer arm absent. Ovipositor slightly longer than the abdomen. (Surinam, Brazil)..... *atrigona* Hend., p. 146
- Hyaline costal area present.....12
12. Hyaline area interrupted on third longitudinal vein.....13
- Hyaline area continuous to include second basal cell.....22
13. Abdominal segments 2, 3, and 4 each with a transverse black band. Inner arm of V usually extending to third vein; outer arm short, extending slightly beyond fourth vein. Ovipositor sheath half as long as head, thorax, and abdomen together. (Cuba, Isle of Pines)..... *tricineta* Loew, p. 146
- Abdominal segments without black markings.....14
14. Costa with a broad, very dark brown band from base of wing to tip of first vein. Ovipositor sheath as long as last three abdominal segments combined. (Jamaica)..... *longimacula*, n. sp., p. 146
- Costa not as above.....15
15. Ovipositor sheath shorter than the abdomen.....16
- Ovipositor sheath as long as or longer than the abdomen.....18
16. V connected with main pattern; species of a more golden brown color; hyaline costal area usually interrupted on third vein. Ovipositor sheath as long as last three abdominal segments combined. (Puerto Rico, Cuba, Florida)..... *suspensa* Loew, p. 147
- V not connected with main pattern; species paler yellow.....17
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panamensis, n. sp., p. 150
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22. Inverted ∇ incomplete; inner arm dark brown, not connected with main pattern; outer arm absent or at most represented by only a brown spot on or near fourth vein. Ovipositor sheath almost as long as the abdomen. (Guatemala, Honduras, Trinidad).....
leptozona Hend., p. 153
 Inverted ∇ complete, both arms complete, not connected with main pattern. Ovipositor sheath very slightly longer than the abdomen. (Brazil, Panama).....*similis*, n. sp., p. 153
23. With two black spots on posterior edge of thorax.....24
 With three (rarely two) somewhat elongated black spots on posterior edge; scutellum with a black latero-basal spot on each side; basal third of scutellum reddish brown, apical portion pale yellow. Wing pattern pale yellow; hyaline costal area continuous to include second basal cell; inner arm of ∇ broadly connected at its apex with the main pattern; outer arm absent. Ovipositor sheath slender, half as long as head, thorax, and abdomen together. (Texas, Honduras).....*pallens* Coq., p. 154
24. Bristles of thorax reddish; thoracic spots large, rounded.....25
 Bristles of thorax black; thoracic spots small, not definitely rounded. Wing pattern mostly dark brown, sharply defined; hyaline costal area continuous; ∇ dark brown, arms narrow, usually not connected. Ovipositor sheath slightly longer than last three abdominal segments. (Brazil)*braziliensis*, n. sp., p. 154
25. Abdominal segments 3 to 5 each with two dorsal brown spots. Hyaline costal area continuous to second basal cell; inverted ∇

- with both arms complete, narrow, reaching to the third vein but not connected together. Ovipositor sheath slender, almost as long as abdomen. (Brazil, Paraguay) *punctata* Hend., p. 155
- Abdominal segments without spots. Otherwise like *punctata*. (Brazil)..... *hendeli*, n. sp., p. 155
26. Palpi broadly black along apical edge. Ovipositor half as long as head, thorax, and abdomen together. (Bolivia)..... *nigripalpis* Hend., p. 156
- Palpi entirely yellow.....27
27. Inverted V absent; hyaline costal area not quite reaching the third vein; a semihyaline area at tip of first posterior cell; a semihyaline triangular area on posterior border of second posterior cell; another such area just beyond the middle of the third posterior cell extending backward to base of wing. Ovipositor sheath almost as long as thorax and abdomen together. (Trinidad)..... *obscura*, Ald., p. 157
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28. Inverted V incomplete (outer arm absent or only part of it present).....29
- Inverted V complete (both arms present).....32
29. Outer arm of V absent; inner arm of nearly uniform width, paler at apex, which touches the third vein, not connected with the main pattern; basal half of wing entirely dark yellow. Ovipositor sheath almost as long as abdomen. (Para, Brazil ?)..... *bivittata* Macq., p. 157
- Outer arm of V usually present in part.....30
30. Hyaline costal area broadly continuous to include second basal cell; inner arm of V pointed at apex and barely reaching third vein; outer arm sometimes absent but usually there is an elongated brown spot on or near the fourth vein. Ovipositor sheath robust, hardly longer than last three abdominal segments. (Guatemala, Honduras, Trinidad)..... *leptozonea* Hend., p. 153
- Hyaline costal area extending to third vein.....31
31. Inner arm of V of nearly uniform width, its apex broadly connected with main pattern; outer arm extending from margin of the wing to or slightly beyond fourth vein. Ovipositor sheath slightly longer than thorax and abdomen together. (Brazil)..... *hamata* Loew, p. 157
- Inner arm of V wide at the base, tapering to apex, where it is paler, touching third vein and narrowly disconnected from main pattern; outer arm narrow, extending from margin of wing to slightly beyond fourth vein. Ovipositor sheath half as long as head, thorax, and abdomen together. (Jamaica)..... *ocresia* Walker, p. 158
32. V connected with main pattern.....33
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33. Hyaline costal area interrupted near the second or on the third vein.....34
- Hyaline costal area continuous to include second basal cell.....41
34. Hyaline costal area interrupted just before the second vein.....35
- Hyaline costal area interrupted on the third vein.....36

35. Scutellum with a black spot at the apex. Wing pattern normal at the stigmal area; apex of \vee broadly connected with main pattern. Length of ovipositor sheath not given in description. (Mexico)....
tripunctata v. d. Wulp, p. 158
 Scutellum entirely yellow. Wing with a large rectangular brownish-black spot which includes the stigmal area; apex of \vee broadly connected with main pattern; inner arm of \vee connected with main pattern along posterior margin of wing. Ovipositor sheath one and one third times as long as the abdomen. Species 7.5 mm. (without ovipositor sheath). (Peru).....*cryptostrepha* Hend., p. 158
 A species very similar but much larger (13 mm. without ovipositor sheath). (Bolivia).....*conjuncta* Hend., p. 159
36. Ovipositor sheath as long as or longer than the abdomen.....37
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37. Ovipositor sheath as long as the abdomen. Hyaline costal area narrowly interrupted on third vein; arms of \vee slender, pale; apex of \vee very narrowly connected or disconnected with the main pattern; wing color pale. (Trinidad).....*sylicola* Knab, p. 159
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38. Ovipositor sheath more than half length of abdomen.....39
 Ovipositor sheath half or less than half length of abdomen.....40
39. Ovipositor sheath three fourths as long as abdomen. Apex of \vee broadly connected with main pattern; outer edge of outer arm continuing in a straight line a little anterior to the second vein; stigmal area deep yellow, a little shorter than the preceding costal section. (Brazil, Panama).....*flavipennis*, n. sp., p. 160
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40. Ovipositor sheath half as long as abdomen. Wing more brown than yellow; hyaline costal area interrupted on the third vein and constricted on the second vein; apex of \vee narrowly connected with the main pattern. (Brazil, Trinidad).....*ethalea* Walker, p. 161
 Ovipositor sheath as long as the last three abdominal segments combined. Hyaline costal area usually broadly interrupted on third vein, not constricted on second vein; apex of \vee broadly connected with main pattern. (West Indies, Panama).....
acidusa Walker, p. 162
41. Bristles of head and thorax black. Stigmal area grayish; dark color of outer arm of \vee forms a definite black line between the third and fourth veins. Ovipositor sheath about two thirds as long as abdomen. (Cuba, Canal Zone, Honduras).....*obliqua* Macq., p. 163

- Bristles of head and thorax reddish yellow. Stigmal area yellowish-brown; wing otherwise like that of *obliqua*. Ovipositor sheath about two thirds as long as abdomen. (Brazil) *xanthochaeta* Hend., p. 163
42. Hyaline costal area interrupted on third vein 43
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43. Inner arm of ∇ connected with main pattern on posterior margin of wing. Ovipositor sheath as long as last three abdominal segments. (Peru) *lambda*, Hend., p. 164
 Inner arm of ∇ not connected with the main pattern 44
44. Ovipositor sheath shorter than the abdomen 45
 Ovipositor sheath as long or longer than abdomen 48
45. Ovipositor sheath three fourths as long as abdomen 46
 Ovipositor sheath not more than two thirds as long as abdomen 47
46. Bristles of thorax black. Apex of ∇ narrowly disconnected from main pattern; stigmal area dark brown, as long as the preceding costal section. Species 6 mm. long. (Trinidad) *trinidadensis*, n. sp., p. 161
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47. Ovipositor sheath two thirds as long as the abdomen. Stigmal area brownish, three fourths as long as preceding costal area; apex of ∇ not connected with main pattern; arms moderately broad. (Brazil, Trinidad, Costa Rica, Guatemala) (see *peruviana*) *fraterculus* Wied., p. 164
 Ovipositor sheath as long as last three abdominal segments combined. Stigmal area dark brown, almost as long as preceding costal area; apex of ∇ not connected with main pattern; arms narrow. (Brazil, Uruguay, Peru.) Species slightly larger than *fraterculus* *distans* Hend., p. 149
48. Ovipositor sheath as long as abdomen 49
 Ovipositor sheath longer than abdomen 50
49. Bristles of thorax reddish-yellow. Arms of ∇ slender, pale colored; apex of ∇ very narrowly disconnected or connected with main pattern; stigmal area as long as the preceding costal area; wing color pale. (Trinidad) *sylicola* Knab., p. 159
 Bristles of thorax black. Arms of ∇ very slender, not connected at apex of ∇ ; apex of ∇ not connected with main pattern. Species smaller than *sylicola*. (Peru) *distincta*, n. sp., p. 149
50. Ovipositor sheath robust, one and one half times as long as abdomen. Wing broad, deep yellow; anterior and posterior margins not parallel; ∇ well marked, its apex not connected with main pattern; outer arm broad. Species robust. (Brazil) *townsendi*, n. sp., p. 165
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51. Ovipositor sheath shorter than abdomen.....52
 Ovipositor sheath as long as or longer than abdomen.....53

52. Ovipositor sheath as long as last three abdominal segments combined.
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braziliensis. (Brazil).....*soluta* Bezzi, p. 166
 Ovipositor sheath a little longer than last three abdominal segments
 combined. Arms of V seldom connected at apex. Species more
 slender than *soluta*. Pattern darker brown, more sharply defined.
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braziliensis, n. sp., p. 154

53. Ovipositor sheath at least as long as head, thorax, and abdomen
 together.....54
 Ovipositor sheath shorter than thorax and abdomen together.....55

54. Ovipositor sheath slender, much longer than head, thorax, and
 abdomen together. Apex of first posterior cell much narrowed
 on apical margin of wing. (Guatemala).....*barnesi* Ald., p. 166
 Ovipositor sheath robust, as long as head, thorax, and abdomen to-
 gether. Apex of first posterior cell normal, not narrowed in apical
 margin of wing. (Brazil).....*consobrina* Loew, p. 167

55. Ovipositor sheath as long as abdomen.....56
 Ovipositor sheath longer than abdomen.....57

56. Ovipositor sheath very slender; abdomen a little longer than broad.
 Stigmal area three times as long as broad. Bristles of thorax
 black. Species paler yellow and slender. (Peru).....
chiclayae, n. sp., p. 167
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 area four times as long as broad. Bristles of thorax slightly
 reddish. Species brownish yellow and more robust than *chiclayae*.
 (Brazil, Panama).....*similis*, n. sp., p. 153

57. Ovipositor sheath slender, about as long as thorax and abdomen to-
 gether. Stigmal area seven times as long as broad. (Brazil,
 Paraguay).....*parallela* Wied., p. 168
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 enlarged at base, tapering to middle, thence very slender to tip.
 Stigmal area five times as long as broad. (Trinidad, Dominican
 Republic).....*integra* Loew, p. 168

TABLE OF SPECIES.

Males.

1. Dark brown to nearly black species..... 2
 Yellow species..... 4

2. Hyaline costal area absent; wing mostly hyaline; a dark brown band
 along costa to tip of fourth longitudinal vein; a dark brown band
 from posterior border following posterior crossvein to slightly

- beyond its tip; a dark band from base of wing extending to tip of sixth vein. (Brazil, Paraguay)..... *daciformis* Bezzi, p. 143
 Hyaline costal area present..... 3
3. Hyaline costal area interrupted just before third vein; only inner arm of ∇ present, beginning near apex of sixth vein, extending upward along posterior crossvein and ending at third vein. (West Indies, Trinidad, Mexico, Central America, Peru, Brazil, Ecuador) *serpentina* Wied., p. 142
 Hyaline costal area continuous to base of second basal cell; only inner arm of ∇ present, connected with main pattern along posterior margin of wing and extending upward along, and ending just beyond tip of, posterior crossvein. (Ecuador) *ornata* Ald., p. 143
4. Dorsum of thorax with one or more black markings..... 5
 Dorsum of thorax without any black marking.....23
5. Dorsal markings in the form of a band or stripes..... 6
 Dorsal markings in the form of a spot or spots..... 8
6. With a broad, transverse, dark brown band on posterior margin of thorax. Hyaline costal area broadly interrupted on third vein; ∇ complete, its apex connected with main pattern. (Mexico, Guatemala, Venezuela)..... *robusta*, n. sp., p. 144
 With two vertical brownish black stripes interrupted at transverse suture.. 7
7. Wing pattern dark yellow; inverted ∇ with only inner arm present, located on posterior crossvein, extending from the fourth longitudinal vein to the posterior margin. (Brazil, Peru, Paraguay).... *grandis* Macq., p. 145
 Wing pattern yellow with some brown near base of wing; inverted ∇ with both arms present, mostly brown, disconnected from main pattern. (Mexico, Central America, Trinidad, West Indies, Bolivia)..... *striata* Schiner, p. 145
8. With one spot at the middle of posterior edge of thorax..... 9
 With two or three spots on posterior edge of thorax.....20
9. Hyaline costal area absent (pattern may be paler at apex of first longitudinal vein). Inner arm of ∇ broad, connected at its apex and on fourth longitudinal vein with main pattern; outer arm absent. (Surinam, Brazil)..... *atrigena* Hend., p. 146
 Hyaline costal area present.....10
10. Inverted ∇ incomplete (only a portion of outer arm present).....11
 Inverted ∇ complete (both arms present).....12
11. Hyaline costal area continuous to include second basal cell; inner arm of ∇ complete to third vein; outer arm incomplete, straight, extending slightly beyond fourth longitudinal vein. Abdomen entirely yellow. (Guatemala, Honduras, Trinidad)..... *leptozona* Hend., p. 153
 Hyaline costal area interrupted on third vein; inner arm of ∇ complete to third vein; outer arm incomplete, curved, extending slightly beyond fourth longitudinal vein. Abdominal segments 2, 3, and 4 with a transverse black band. (Cuba, Isle of Pines)..... *tricineta* Loew, p. 146

12. Inverted V connected with main pattern.....	13
Inverted V not connected with main pattern	15
13. Base of wing with a broad blackish area extending to tip of first longitudinal vein; hyaline area narrowly interrupted on third vein. (Jamaica).....	<i>longimacula</i> , n. sp., p. 146
Base of wing without large black area.....	14
14. Hyaline costal area usually narrowly interrupted on third vein; small species, golden brown in color. (Puerto Rico, Cuba, Florida)	
.....	<i>suspensa</i> Loew, p. 147
Hyaline costal area very broadly interrupted on third vein; large pale yellow species. (Canal Zone).....	<i>passiflorae</i> , n. sp., p. 151
15. Bristles of thorax and abdomen deep reddish; hyaline costal area interrupted on third vein; V indistinctly marked; wing pattern very pale yellow. (Panama).....	<i>zeteki</i> , n. sp., p. 152
Bristles of thorax and abdomen black.....	16
16. Hyaline costal area very narrowly continuous to include second basal cell; V well marked to third vein; stigmal area almost as long as preceding section. (Mexico, Texas).....	<i>ludens</i> Loew, p. 151
Hyaline costal area narrowly to broadly interrupted on third vein.....	17
17. Stigmal area about one half as long as preceding costal area; interruption on third vein slightly longer than anterior crossvein; V well marked, of nearly uniform color to the apex. (Panama).....	<i>panamensis</i> , n. sp., p. 150
Stigmal area at least two thirds as long as preceding costal area.....	18
18. Stigmal area dark brown, almost as long as the preceding costal area; apex of V pale yellow; arms connected at third vein; width of apical crossband about three fourths the length of anterior crossvein. (Brazil, Uruguay, Peru).....	<i>distans</i> Hend., p. 149
Stigmal area with a brownish tinge; about two thirds as long as preceding costal area	19
19. Inverted V pale yellow at apex; outer arm very narrow; width of apical crossband never more than half the length of anterior crossvein. Paler yellow species than <i>distincta</i> . (Peru, Chili).....	<i>peruviana</i> Towns., p. 148
Inverted V mostly brown, paler at apex; outer arm about three fourths as wide as inner arm; width of apical crossband two thirds to three fourths as long as anterior crossvein. Dark tawny species, a little larger than <i>peruviana</i> . (Peru).....	<i>distincta</i> , n. sp., p. 149
20. Usually with three pointed spots on postero-dorsal margin of thorax (middle spot sometimes absent). Wing pattern pale yellow; hyaline costal area continuous to include second basal cell; inner arm of V connected with main pattern; outer arm absent. Scutellum broadly brown on basal third, apical portion pale yellow; a black spot on the latero-basal angle. (Texas, Honduras).....	<i>pallens</i> Coq., p. 154
With two spots on postero-dorsal margin of thorax	21
21. Thoracic spots small, not definitely outlined. Hyaline costal area	

- continuous to include second basal cell; arms of \vee narrow, mostly brown, narrowly disconnected at apex. (Brazil).....
braziliensis, n. sp., p. 154
- Thoracic spots large, rounded. Hyaline costal area continuous to include second basal cell.....22
22. Abdominal segments three to five each with two dorsal brown spots. Inverted \vee with both arms complete, reaching to third vein but not connected together. (Brazil, Paraguay).....*punctata* Hend., p. 155
- Abdominal segments without spots. Otherwise like *punctata*. (Brazil).....*hendeli*, n. sp., p. 155
23. Hyaline costal area present, ending between second and third longitudinal veins; \vee entirely absent; wing pattern mostly brownish yellow; a large triangular hyaline area on posterior margin of wing; a second large hyaline area on posterior margin of wing from middle of third posterior cell to base of wing. Species dull brown in color. (Trinidad).....*obscura* Ald., p. 157
- Hyaline costal area present, extending to or beyond the third vein. Inverted \vee present.....24
24. Hyaline costal area continuous to include second basal cell.....25
- Hyaline costal area interrupted near second or at third longitudinal vein.....32
25. Inverted \vee incomplete; inner arm tapering to third vein, not connected with main pattern; outer arm short, extending from margin of wing to a little beyond fourth vein. (Guatemala, Honduras, Trinidad).....*leptozona* Hend., p. 153
- Inverted \vee complete, both arms complete.....26
26. Apex of \vee connected with main pattern; dark color on outer side of outer arm forming a rather definite black line to third vein; bright yellow species. (Cuba, Canal Zone, Honduras).....*obliqua* Macq., p. 163
- Apex of \vee not connected with main pattern.....27
27. Mouth with a broadly flattened margin of shining black edged with white; third joint of antenna yellow with a black apex. Inner arm of \vee dark brown extending along margin of wing almost to sixth vein. (Costa Rica).....*schausi* Ald., p. 168
- Mouth and antenna entirely yellow.....28
28. Inner arm of \vee broad, touching posterior margin of wing only at fifth vein; outer arm of \vee narrow, not quite touching posterior margin. Metanotum deep yellow. (Brazil).....*consobrina* Loew, p. 167
- Both arms of \vee touching posterior margin of wing.....29
29. Stigmal area golden yellow, normal in size; a conspicuous small black spot at juncture of second and third veins and another elongated dark brown spot on third vein just beyond this juncture. Metanotum entirely yellow. Species medium sized. (Peru).....
chiclayae, n. sp., p. 167
- Stigmal area not as above.....30
30. Stigmal area unusually long and narrow, golden brown in color; a black spot at anterior apex of humeral crossvein and auxiliary

vein. Metanotum deep yellow. (Large species, 9 to 10 mm. long) (Brazil, Paraguay).....	<i>parallela</i> Wied., p. 168
Not as above. (Smaller species, 5.5 to 6 mm. long).....	31
31. Stigmal area normal in size, brownish black; apical crossband wider at third vein where width is equal to three fourths length of anterior crossvein; arms of ∇ slightly separated at apex. Meta- notum and postscutellum black on sides. (Brazil).....	<i>braziliensis</i> , n. sp., p. 154
Stigmal area yellow with a faint brown tinge; apical crossband narrow, of equal width throughout, its width equal to about half length of anterior crossvein. Metanotum and postscutellum with black on each side. (General color pale yellow). (Brazil).....	<i>soluta</i> Bezzi, p. 166
32. Hyaline costal area not reaching second vein.....	33
Hyaline costal area interrupted at third vein.....	34
33. Arms of ∇ broad, their sides nearly parallel; inner arm extending along posterior margin of wing about three fourths distance to sixth vein; width of apical crossband uniform, equal to length of anterior crossvein. Metanotum and postscutellum deep tawny. Scutellum yellow. (Dominican Republic).....	<i>integra</i> Loew, p. 168
Arms of ∇ narrow, their sides sinuous; inner arm only slightly widened on posterior margin of wing at tip of fifth vein; width of anterior crossband much greater than length of anterior cross- vein, its greatest width on third vein. Scutellum with a black spot at apex. Metanotum with a black spot on each side. (Mexico)	<i>tripunctata</i> v. d. Wulp, p. 158
34. Wing with costal vein slightly concave near apex of second vein; wing pattern mostly deep brown; inverted ∇ broadly connected with main pattern; outer arm slightly curved. (Canal Zone).....	<i>concava</i> n. sp., p. 169
Wing normal in outline.....	35
35. Inverted ∇ connected with the main pattern.....	36
Inverted ∇ not connected with the main pattern.....	39
36. Hyaline costal area slightly constricted at second vein.....	37
Hyaline costal area not constricted, sides of area straight.....	38
37. Wing pattern more brownish along basal portion of costa; apical crossband of uniform width. (Slightly larger species than fol- lowing one.) (Brazil, Trinidad).....	<i>ethalea</i> Walker, p. 161
Wing pattern lighter along basal portion of costa; apical crossband slightly wider at third vein. (Slightly smaller species than the former.) (Trinidad).....	<i>trinidadensis</i> , n. sp., p. 161
38. Wing pattern mostly yellow; ∇ broadly connected with the main pattern; outer side of outer arm almost straight, outer arm broad; inner edge of apical crossband almost straight, band broad; stigmal area uniformly broad. Metanotum light reddish-yellow. (Large species.) (Brazil, Panama).....	<i>flavipennis</i> , n. sp., p. 160
Wing pattern with considerable blackish brown color; ∇ narrowly to broadly connected with the main pattern; outer arm not as in	

- above species, narrow; inner edge of apical crossband curved, not perfectly even; stigmal area narrow, tapering sharply to apex. Metanotum usually with a black marking on each side. (Small species.) (West Indies, Panama) *acidusa* Walker, p. 162
39. Rather large species (8 to 10 mm.); stigmal area long and narrow 40
Smaller species; stigmal area not so long 41
40. Stigmal area as long as preceding costal section, very narrow, tapering from base to apex; apical crossband very dark toward its apex. (Trinidad)..... *sylicicola* Knab, p. 159
Stigmal area a little shorter than preceding costal area, narrow, tapering from about basal fourth to apex; apical crossband of a nearly uniform yellow. (Species slightly more robust than the above.) (Trinidad, Brazil)..... *pseudoparallela* Loew, p. 164
41. Arms of ∇ narrow, narrowly separated at third vein; interruption on third vein not more than one half length of anterior crossvein. (Peru)..... *distincta*, n. sp., p. 149
Arms of ∇ connected at the third vein..... 42
42. Stigmal area three fourths as long as preceding costal section; first posterior cell as wide on margin of wing as it is opposite posterior crossvein. (Brazil, Trinidad, Costa Rica, Guatemala)..... *fraterculus* Wied., p. 164
Stigmal area almost as long as preceding costal area; first posterior cell much narrowed on margin of wing. (Brazil, Uruguay, Peru) (Slightly larger species than *fraterculus*)..... *distans* Hend., p. 149

Anastrepha serpentina Wiedemann.

(Plate 19, fig. 1.)

This species was originally described by Wiedemann (34, p. 521) in 1830 in the genus *Dacus*. Macquart (24, p. 373 (216)) in 1843 placed the species in the genus *Leptoxys*. Macquart (26, p. 259 (286)) in 1851 described *Urophora vittithorax*, which is a synonym. Schiner (28, p. 263) in 1868 erected the new genus *Anastrepha* with *serpentina* Wied. as genotype. Loew (20, p. 227) in 1873 erected the genus *Acrotoxa*. Bezzi (3, p. 284) in 1909 placed the species again in *Anastrepha*. Hendel (14, p. 14-16) in 1914 used this latter name also. This species is distinguished from all the other species of the genus by the wing pattern, thoracic markings, and general dark color.

Described from Brazil, no date. Specimens in the U. S. National Collection are from the following localities: Bahia, Brazil, March, 1905; Lima, Peru, Aug. and Sept., 1930, W. M. Mann collector; Huerta Palmarei Malamba, Peru, March 15-31, 1932, M. Kisliuk and C. E. Cooley collectors; Ecuador, no date, F. Campos R. collector; La Ceiba, Honduras, January 4, 1926, E. Kostal collector; Ancon, Canal Zone; La Sabanas, Panama and Panama City, Panama, March, April, May, 1926, I. Molino and C. T. Greene collectors; San Pedro de Montes de

Oca, Costa Rica, Feb. 28, 1933, C. H. Ballou collector; Guatemala City, Guat., July 23, 1923, E. G. Smyth collector; Trinidad, B. W. I., Nov. 1913, F. W. Urich collector; Cuernavaca, Mexico, no date, A. L. Herrera collector; and Weslaco, Tex., July 3, 1933, G. V. Harren collector.

Reared from the following fruits: *Mammea americana*, *Chrysophyllum panamense* (common name, caimito), adults emerged March 27, 1933, Nispero, *Achras zapota* (cultivated sapodilla), star apple, and guava.

The type is in the Vienna Museum.

Anastrepha ornata Aldrich.

(Plate 19, fig. 2.)

This species was originally described by Aldrich (2, p. 6) in 1925 and is distinguished by the wing pattern.

Described from Banos, Oriente, Ecuador, October 30, 1922, and January 19, 1923, F. X. Williams collector.

Host unknown.

Both types are in the U. S. National Collection. One specimen was captured on the "luma tree."

Length 6 mm. without the ovipositor sheath, which is 3 mm. long.

Anastrepha daciformis Bezzi.

(Plate 19, fig. 3.)

This species was originally described by Bezzi (3, p. 282) in 1909. In his revision of this genus published in 1914 Hendel (14, p. 13) erected the new subgenus *Pseudodacus* for this beautiful species, which is separated from all other species of the genus by the wing pattern and general form of the body.

Described from Sao Paulo, Brazil. Specimens in the National Collection are from Sao Paulo, Brazil, December 26, 1931, and were taken by Max Kisliuk and C. E. Cooley on leaves and fruit of persimmon.

Host unknown.

The types are in the collection of the late Prof. M. Bezzi at Milan and in the collection of the Hungarian Museum at Budapest.

Anastrepha macrura Hendel.

(Plate 19, fig. 4.)

This species was originally described by Hendel (14, p. 16) in 1914. It is distinguished from all other species by the following characters: Three pairs of frontal bristles, all bristles of a deep reddish-yellow color; metanotum and postscutellum black, and the unusual wing pattern. Length of body, 8 mm., ovipositor sheath 5.5 mm.

Described from Paraguay, no date.

Host unknown.

The type is in the Hungarian National Museum and was examined by the writer.

Anastrepha robusta, n. sp.

(Plate 19, fig. 5.)

Male and female.—Dull luteous with the surface of the thorax and abdomen covered with short, dense, yellow hairs; the hairs along the sides of the abdomen longer and brownish in color; all macrochaetae black. Thorax with a broad, dark brown, transverse band on the posterior edge as long as the scutellum, humeri, a stripe on each side, extending from scutellum to the transverse suture; and a large indefinite area in front of the dark brown band, pale yellow; pre-scutellar row with the dorsocentrals very slightly forward; sternopleura present but weak (hairlike), yellow in color; scutellum pale yellow with four macrochaetae; metanotum and postscutellum reddish yellow without black markings. Abdomen only slightly longer than broad.

Male: Last abdominal segment about one and one half times as long as the preceding segment; two middle segments of equal width.

Female: Last segment very narrow; three preceding segments of nearly equal length; ovipositor short, robust, slightly darkened at apex.

Wing pattern golden yellow partly edged with pale brown: costal hyaline area broadly touching the third longitudinal vein and narrowly interrupted from the hyaline area involving the second basal cell; inverted V complete and definitely connected with the main pattern; a large hyaline spot involving the second basal cell, base of discal and extending into the first basal cell. Pattern of the wing of one female the same but much darker in color.

Length 8 mm. without ovipositor; length of ovipositor 2.25 mm.; wing 8 mm.

Male of same size except wing, which is 8.5 mm.

Described from three specimens.

Type, female, allotype, male, Cat. No. 50508, U. S. N. M.

Type from Cayuga, Guatemala, VIII-15, W. Schaus collector; allotype from Cordoba, Mex., XI.6, F. Knab collector. One paratype female from C. Bolivar, Venez. V. 14.98, from the collection of C. W. Johnson now in the Museum of Comparative Zoology. This paratype is slightly paler in color than the type; it appears to have been in liquid.

Anastrepha cordata Aldrich.

(Plate 19, fig. 6.)

This species was originally described by Aldrich (2, p. 4) in 1925. This unique looking specimen can be distinguished from all other species by the unusual wing pattern and the ovipositor sheath.

Described from Belize, British Honduras, no date.

Host unknown.

The type is in the U. S. National Collection and was examined by the writer.

Anastrepha grandis Macquart.

(Plate 19, fig. 7.)

This species was originally described by Macquart (25, p. 340 (212)) in 1846 in the genus *Tephritis*. Loew (20, p. 231) in 1873 referred the species to *Acrotoxa*. Bezzi (3, p. 284) in 1909 referred the species to the genus *Anastrepha*. Hendel (14, p. 14-15) in 1914 placed it in the latter genus also. Fischer (11, p. 303) in 1932 made *schineri* Hendel a synonym of *grandis*. Dr. Hendel loaned the writer two specimens of *schineri* and the synonymy is correct. *A. grandis* is distinguished from all the other species of the genus by the wing pattern and the ovipositor sheath.

Described from New Grenada, no date. Specimens in the National Collection are from Rio Grande do Sul, Brazil, Nilopolis, Brazil, Nov. 16-18, 1931, Viosa Minas Geraes, Brazil, Nov. 1928 (through Dr. R. H. Rolfe), Sao Paulo, Brazil, Dec. 26, 1931, Rio de Janeiro, Brazil, Dec. 11, 1931, all collected by M. Kisiuk and C. E. Cooley; S. Bernardino, Paraguay, K. Fiebrig collector; Chimbotes, Amazon, Peru, March 20, 1931, R. C. Shannon collector. The above specimens were captured on the foliage of Valencia orange, guava, and magnolia.

Reared from squash Nov. 1928, and from watermelon Dec. 11, 1931. Reared from oranges from the State of Rio Grande do Sul.

The type is in the collection of M. Bigot.

Anastrepha striata Schiner.

(Plate 19, fig. 8.)

This species was originally described by Schiner (28, p. 264) in 1868. Bezzi (3, p. 283-285) in 1909 and Hendel (14, p. 15-16) in 1914 mentioned the species in their revisions. The species may be distinguished from all others by the wing pattern and thoracic markings.

Described from females from South America. Specimens in the U. S. National Collection are from Port of Spain, Trinidad, January, 1914, and Arima, Trinidad, no date, F. W. Urich collector; near Juan Diaz, Panama, Ancon, Canal Zone, Oct. 1923, James Zetek collector; La Sabanas, Panama, April 5 to May 9, 1926, and Frijoles, Canal Zone, April 12, 1926, C. T. Greene collector; Cuernavaca, Mexico, Sept. 1923, E. G. Smyth collector; La Ceiba, Honduras, no date, E. Kostal collector; Cavinasi Beni, Bolivia, 1921-22, W. M. Mann collector; San Pedro de Montes de Oca, Costa Rica, November 4, 1932, C. H. Ballou collector; and San Jose, Costa Rica, no date, A. T.

Tonduz collector. Some specimens were captured on *Inga ingoides*.

Reared from fruit of *Calyptranthes tonduzii* and from guava. The type is in the Vienna Museum.

Anastrepha atrigona Hendel.

(Plate 19, fig. 9.)

This species was originally described by Hendel (*14*, p. 20) in 1914 and is distinguished from all other species by the wing pattern.

Described from Surinam, May–Sept. Also a female specimen in the collection of Dr. Hendel labeled “Amazonas, Dampfer, Prainha, Monte Alegre, May 30, 1927, H. Zerny collector.” A female specimen in the National Collection from Amazon River, Aiary to Manaos, Brazil, Sept. 20–21, 1930, Holt, Blake, and Agostini collectors.

Host unknown.

Type, male, in the collection of Dr. F. Hendel. The type was examined by the writer.

Anastrepha tricineta Loew.

(Plate 19, fig. 10.)

Length 7 mm. without ovipositor sheath, which is 3.5 mm.

This species was originally described by Loew (*20*, p. 225) in 1873 in the genus *Trypeta* and later (*20*, p. 227) he erected the new genus *Acrotoxa*. Prof. M. Bezzi (*3*, p. 284) in 1909 placed the species in the genus *Anastrepha*. Dr. Hendel (*14*, p. 14–16) in 1914 followed Bezzi. This species is distinguished from all others by its wing pattern and the dorsal black markings.

Described from Haiti, no date. Specimens in the U. S. National Collection are from Bolondron, P. de Gruanaha, Cabibres, Cuba, March 11 and April 11, 1924, S. C. Bruner collector, and Baracao de Banta, Cuba, June 19, 1930, E. Kostal collector; Isle of Pines, June, 1924, G. Moznette collector. Specimens were captured on mango, orange, and grapefruit.

Host unknown.

Type in the Museum of Comparative Zoology, Cambridge, Mass. Type examined by the writer.

Anastrepha longimacula, n. sp.

(Plate 19, fig. 11.)

Male and female.—Deep yellowish amber in color, subshining, with the humeri, a narrow area along the pleural suture, and the scutellum pale yellow. All bristles black; the short fine hair covering the dorsum of the thorax and abdomen yellow, in certain lights this hair appearing darker on the abdomen. Antennae reaching three fourths the distance to the oral margin; third joint twice as long

as wide in the male and two and one half times as long as in the female; arista long, slender, dark, with short pubescence and with the base yellow and swollen; palpus broad with the bristles pale, darker at the apex; four or five pairs of frontals; a reclinate pair on each side above the frontals; ocellar triangle small, black, with a small pair of ocellars. Prescutellar row with the dorsocentrals set well forward; one sternopleural bristle; metanotum concolorous with the thorax and without markings. Wing with the hyaline costal area slightly open or just barely closed on the third longitudinal vein; wing pattern mostly brown with a little yellow through the central area; inverted V complete, narrowly connected with the main pattern; a large dark brown to nearly black area of equal width on the costa extending from the base of the wing to the tip of the first longitudinal vein.

Male abdomen about as broad as long, last segment one and one half times as long as the preceding. Female abdomen about as broad as long; posterior segments of about equal length; ovipositor sheath slightly shorter than the abdomen, more reddish, robust, with the apex darkened.

Length of female 5.5 mm. without ovipositor sheath, which is 1.75 mm.; wing 7 mm.

Length of male 5.5 mm.; wing 6 mm.

Described from 9 specimens: Hope, Jamaica, VI 16-17, 1931, Kisliuk and Cooley collectors; Jamaica, intercepted at Boston, Sept. 8, 1925, C. A. Davis collector; Mandeville, Jamaica, no date, T. D. A. Cockerell collector; and Kingston, Jamaica, Sept. 9, 1917, Harold Morrison collector.

Type, female, allotype, male, Cat. No. 50514 U. S. N. M.

Both from Hope, Jamaica.

Paratypes, 3 males, 4 females.

Host unknown.

Adults collected on leaf of cocoa tree and on leaf of mango.

Note. Two of the specimens show a dark, faintly infuscated spot on the posterior edge of the thorax in front of the scutellum.

The wing of this species shows a slight resemblance to that of *A. cryptostrepha*, but on examination the pattern is entirely different and there is a difference in the character of the bend of the fourth longitudinal vein.

Anastrepha suspensa Loew.

(Plate 19, fig. 12.)

This species was originally described by Loew (19, p. 69) in 1862 in the genus *Trypeta*. Schiner (28, p. 263) in 1868 erected the genus *Anastrepha*. Loew (20, p. 222 and 227) in 1873 erected the genus *Acrotoxa*. Bezzi (3, p. 284) in 1909 placed this species in *Anastrepha*. Hendel (14, p. 16) in 1914 also referred this species to *Anastrepha*. Sein (29, p. 190-191) in 1933 described a new species, *unipuncta*, which is really a synonym of *suspensa*. This species is distinguished from all the other species of the

genus by the deep golden brown color, the wing pattern, and the dorsal black spot on the posterior edge of the thorax.

Described from Cuba, no date, Poey collector. Specimens in the U. S. National Collection are from Arecibo, P. R., July 27, 1931, to April 2, 1932, Anderson, Berry, Faxon, Mills and Oakley collectors; Villalba, P. R., Oct. 27, 1931, Anderson and Oakley collectors; Fajardo, P. R., Sept. 1, 1931, Martinez collector; Baraguá, Cuba, no date, L. C. Scaramuzza collector; Rio Piedras, P. R., February 5, 1932, Anderson and Mills collectors; and Bayamon, P. R., June 6, 1932, Oct. 28, 1932, Kisliuk and Ludlam collectors. Specimens were captured on guava, star apple, pomarrosa fruit, grapefruit, and sour orange, and adults taken at light.

Rared from the following fruits: guava (*Psidium guajava*), bitter almond (*Terminalia catappa*), plum (*Spondias lutea*), and *Chrysobalanus icaco*, rose apple or pomarrosa (*Eugenia jambos*), nispero (*Achras zapota*), grapefruit (*Citrus maxima*), sour orange (*Citrus aurantium*), Valencia orange (*Citrus aurantium*), Valencia orange (*Citrus sinensis*), kumquat (*Fortunella margarita*).

The type is in the Museum of Comparative Zoology and was examined by the writer.

The type has one very good character which Loew did not mention in the original description. On the dorsum of the thorax, at the middle of the posterior edge, is a black spot which sometimes extends onto the scutellum. This species is more of a deep golden brown color than a clay-yellow as stated by Loew. The wing pattern is mostly of a rich golden brown, the apex of the inverted V is definitely connected with the main pattern.

Anastrepha peruviana Townsend.

(Plate 20, fig. 1.)

This species was originally described by Townsend (31, p. 345-346) in 1913. Hendel (14, p. 13-15) in 1914 referred to the species in a footnote and in his table of species. It has been considered a synonym of *fraterculus* Wied. by some workers but the writer examined the types and is convinced that it is a good species which may be distinguished from all the other species of this genus by the black thoracic marking, the wing pattern, and the general pale color.

Described from Chosica, Peru, no date, and Sullana, Peru, issued March 5, 1912, from peaches, C. H. T. Townsend collector. Other specimens in the U. S. National Collection are from Trujillo, Peru, May 26, 1932, Malamba, Peru, March 31, 1932, Asenda Caballera, Peru, March 31, 1932, Est. Inf. Sugarcia, 13 km. north of Lima, Peru (no date), Arica, Chile, February, 1929, La Maita, Arica, Chile, February 7-8, 1932,

M. Kisiulik and C. E. Cooley collectors; and Boa Vista, Brazil, February 5, C. H. T. Townsend collector.

Reared from peaches and *Annona cherimola*.

Additional specimens in the U. S. National Collection were collected on the fruit of pomegranate, fig, peach, orange, mango, and grape. Some specimens were captured on the leaves of loquat, avocado, and guava.

Anastrepha distans Hendel.

(Plate 20, fig. 7.)

This species was originally described by Hendel (14, p. 17) in 1914. It is separated from all the other species of the genus by the wing pattern. A specimen was loaned to the writer for study by Dr. Hendel.

Described from Peru, Meshagua, October. Specimens in the U. S. National Collection are from Casa Sr. Perez, 2 km. west of Santa Eulalia, Peru, no date; near Sao Paulo, Brazil, Dec. 27, 1931; Piracicaba, Sao Paulo, Brazil, Dec. 29, 1931; Campinas and Louviera, Sao Paulo, Brazil, Dec. 28, 1931; Matula Salvador and Cabulla, Bahia, Brazil, Dec. 11, 1931; M. Kisiulik and C. E. Cooley collectors.

Host unknown. Specimens have been collected on pomegranate, peach, Valencia orange, sour orange, guava, apple, plum, grape, sapodilla, persimmon, *Citrus medica*, and *Eugenia* sp.

Anastrepha distincta, n. sp.

(Plate 20, fig. 2.)

Male and female.—Entire insect deep luteous yellow, subshining; the face, front, occiput, humeri, sides of the dorsum of the thorax with a narrow stripe from the suture to the posterior corner, a narrow central stripe broadening on the posterior end, and the scutellum lemon-yellow; all bristles black; the short hairs covering the dorsum of the thorax and abdomen pale yellow. Antenna reaching three fourths distance to oral margin; third joint two and one half times as long as broad and rounded at the apex; arista dark, almost bare, with the base thickened and yellow. Palpus with yellow hairs, those at the apex faintly infuscated. Four pairs of frontal bristles in male and five in female; a reclinate pair above the frontals in each sex; ocellar triangle small, black. Prescutellar row present with the dorsocentrals set well forward; one sternopleural bristle, yellow and hairlike; metanotum of deep amber color with the sides broadly blackened. Wing: Hyaline costal area to the third vein, where it is interrupted; inverted V complete, disconnected, apical portion pale yellow, remainder brownish.

Male: Abdomen slightly longer than broad; second and third segments about equal in length; fourth segment twice as long as third.

Female: Abdomen about as long as broad; ovipositor sheath robust, deep reddish-yellow.

Length 7.5 mm. without ovipositor sheath, which is 3 mm.; wing 7.5 mm.

Male 7 mm.; wing 7 mm.

This species resembles *peruviana*.

Described from 65 specimens from estate of M. Carmona Ferranefe, Huerta Palmarei Malambo, Peru, March 31, 1932; estate of I. Gonzales, 2.5 km. north of Ferranefe, Peru, March 20, 1932; Hacienda Higuirilla Surco, Peru, March 17, 1932; Hacienda Ouefe, J. R. Ugaz, Chiclaya, March 21, 1932, Huerta Santa Rosa, H. Gonzalez, Lambeyeque, Peru, March 21, 1932; Casa Sr. Perez, 2 km. west Santa Eulalia, Peru, no date; Kisliuk and Cooley collectors.

Type, female, allotype, male, Cat. No. 50513, U. S. N. M.

Host unknown.

Adults collected on leaf and fruit of mango, pomarosa, orange, quince, guava, *Annona cheromola*, leaf of *Inga feuillei*.

Anastrepha panamensis, n. sp.

(Plate 20, fig. 8.)

Male and female.—Deep golden yellow, translucent. All bristles black; the fine short hair on the thorax and abdomen pale yellow. Antenna reaching about three fourths the distance to the oral margin; third joint slightly deeper yellow, about two and one half to three times as long as broad, rounded at the apex; arista dark, with short pubescence, the base slightly swollen and yellow. Palpus broad, yellow, with yellowish bristles. Frontal bristles varying from three to five pairs; a reclinate pair on each side above the frontals, the upper bristle slightly smaller, ocellar triangle small, black, ocellar bristles quite small. Prescutellar row in a straight line; no sternopleural; metanotum deep reddish-brown without black markings. Abdomen of the male slightly longer than broad; last segment about one and one half times as long as the preceding; in the female the abdomen is about as broad as long with the segments of nearly equal length. Wing pattern alike in both sexes; hyaline costal area reaching the third vein, where it is broadly interrupted; inverted V decidedly disconnected, complete, but the color weaker at the apex where the two arms meet at the third vein.

Length of female 7 mm. without ovipositor sheath, which is 3 mm.; wing 7.5 mm.

Male 6 mm.; wing 6 mm.

Described from two males and two females, Barro Colorado, Island, Canal Zone.

Type, female, allotype, male; Cat. No. 50510, U. S. N. M.; paratypes, male and female (ovipositor sheath broken).

Reared from fruit of wild cainito (*Chrysophyllum cainito*). Flies emerged March 21–24, 1930.

Anastrepha ludens Loew.

(Plate 20, fig. 3.)

This species was originally described by Loew (20, p. 223) in 1873 in the genus *Trypeta*; then Loew (20, p. 227) placed the species in the genus *Acrotoxa*. Johnson (16, p. 53-57) described the female in 1898. Bezzi (3, p. 284) in 1909 referred the species to *Anastrepha*. Hendel (14, p. 14-15) in 1914 referred the species to this latter genus also. It is distinguished from all the other species in the genus by the wing pattern and the ovipositor sheath. Some good characters not mentioned in the original description are as follows: In both sexes the dorsum of the thorax with a blackish spot at middle of posterior edge; metanotum with or without a black spot on each side; postscutellum with a black spot on each side.

Described from Mexico, no date. Specimens in the U. S. National Collection are from Guanajuato, Mexico, A. Duges collector; Morelos, Mex., no date, A. Koebele collector; Mexico City, January and February 3, 1898, Cordoba, Mex., March 2, 1908, F. Knab collector; Tampico, Mex., January and March 3, 1913, T. E. Holloway collector; Los Condes, Mex., February 3, 1898, A. Koebele collector; Matamoros, Mex., Oct. 15-Nov. 12, 1929, A. V. Smith collector; Laredo, Tex., May 8, 1924 (material from Mex.), A. A. Stalmach collector; Mission, Tex., no date, and Weslaco, Tex., February 10, 1932, G. M. Douglas collector.

Reared from grapefruit, January, 1913, and April 2, 1913. Also reared from orange and mango.

The type (male) is supposed to be in the Museum of Comparative Zoology but only the pin remains.

Anastrepha passiflorae, n. sp.

(Plate 20, fig. 9.)

Male and female.—Very much like *A. zeteki*, n. sp., but differs in the following characters: Entire insect deeper yellow and subshining. Thoracic stripes indistinct. Antenna reaching nearly to oral margin; third joint about two and one half times as long as wide. Three or four frontal bristles on each side; ocellar pair usually small. Two acrostichal bristles just before the scutellum and slightly behind the dorsocentrals; one dorsocentral on each side located definitely anteriorly to the acrostichal pair; no sternopleural bristle. Wing pattern mostly clay-yellow with a slight infuscation of brown in the third posterior cell, along the tip of the apical crossband and the greater portion of both arms of the inverted V; hyaline costal area reaching the third longitudinal vein, and very broadly interrupted on this vein; inverted V complete, broadly connected at its apex with the main pattern; inner arm of V broadly and outer arm narrowly deep brown; width of apical crossband almost equal to length of apical crossband.

Female: Abdomen twice as long as wide; fifth abdominal segment not much

wider than the fourth; ovipositor a little shorter than the thorax and abdomen together, only slightly enlarged on the basal half.

Length of female 8-8.5 mm. without ovipositor sheath, which is 5.6-6 mm. long; wing 9 mm. long.

Male: Fifth abdominal segment twice as wide as the fourth; fifth with a marginal row of black bristles.

Length of male 8 to 9 mm.; wing 8-9 mm. long.

Described from 44 specimens from Barro Colorado Island, Canal Zone, June 7-22, 1927, I. Molino collector, Z-2744 and Z-3042, and one specimen from Barro Colorado Island, C. Z., April 21, 1929, on passion flower, S. W. Frost collector.

Type, female, allotype, male, Cat. No. 50506 U. S. N. M.; paratypes, males and females.

Reared from fruit of *Passiflora vitifolia* by James Zetek.

Anastrepha zeteki, n. sp.

(Plate 20, fig. 4.)

Male and female.—Entire insect pale yellow, subshining, with a faint, brownish stripe on each side of the dorsum of the thorax extending forward and fading before reaching the suture. All bristles brown to nearly black; the short fine hair covering the thorax and abdomen pale yellow. Antenna reaching three fourths the distance to the oral margin; third joint twice as long as broad, with the apical end slightly narrower and rounded at apex; arista long, slender, faintly pubescent, dark brown with the basal fourth yellow. Palpus strongly curved on the basal side, with the bristles yellow. Four to six frontal bristles on each side; two pairs of large, reclinate bristles on upper side of front; inner and outer verticals large; ocellar bristles small, ocellar triangle deep brown with yellow ocelli. Prescutellar row of four bristles in a straight line; two postalar bristles in the same line with the prescutellar; one sternopleural bristle; a small black spot below postalar callosity; metathorax without black marking. Abdomen about twice as long as wide.

In the female the fifth abdominal segment about equal in length to the fourth; ovipositor sheath cylindrical, enlarged at the base, with the tip dark brown; length slightly greater than head, thorax, and abdomen combined. Wing pattern pale honey yellow; hyaline costal area extending to the third longitudinal vein; entire second basal cell, basal fourth of discal cell, and a large spot the width of the first basal cell hyaline; this spot is broadly separated from the costal hyaline area on the third vein by the yellow pattern; the inverted V rather faint, mostly gray except the apical portion of the inner arm, which is faintly yellowish; the V reaching the third vein and broadly disconnected from the diagonal yellow band.

Length of female 7.5 mm. without ovipositor sheath, which is 8 mm.; wing 8 mm.

Male: Fifth abdominal segment twice as long as fourth, three large bristles at each apical angle.

Length of male 8 mm.; wing 8 mm.

Described from 3 specimens, Barro Colorado Island, Canal Zone, James Zetek collector, No. Z-3279.

Type, female, allotype, male, Cat. No. 50511, U. S. N. M.; paratype, female.

Reared from *Chrysophyllum panamense* Pittier (a small star-apple native to Panama).

Related to *parallela* Wied.

Anastrepha leptozona Hendel.

(Plate 20, fig. 10.)

This species was originally described by Hendel (*14, p. 19*) in 1914. It is distinguished from all the other species of the genus by the wing pattern.

Described from Bolivia, Mapiri, February. Specimens in the U. S. National Collection are from Puerto Barrios, Guatemala, April 20, 1923, E. G. Smyth collector; Cayuga, Guat., Aug. 1915, W. Schaus collector; Barrios, Guat., Jan. 28, 1912, Mrs. W. P. Cockerell collector; Antigua, Guat., June 23, 1923, E. G. Smyth collector; La Ceiba, Honduras, no date, E. Kostal collector; Salvador, Bahia, Brazil, Dec. 11, 1931, M. Kisliuk and C. E. Cooley collectors; and Las Cuevas Road, Trinidad, February, 1932, F. W. Ulrich collector. Specimens were collected on *Eugenia sp.* and *Rheedia sp.*

Host unknown.

The type is in the Dresden Museum.

Anastrepha similis, n. sp.

(Plate 20, fig. 5.)

Female.—Dull, translucent, luteous yellow. All bristles black; the fine short hair on the surface of the thorax and abdomen pale yellow. Antenna reaching three fourths the distance to the oral margin; third joint about two and one half times as long as broad, rounded at apex; arista long, slender, pubescent, brown above with basal portion thicker and yellow. Palpus broad, bristles yellow, those at apex longer and black. Three pairs of frontal bristles; an upcurved pair of bristles on each side above frontals. Prescutellar row present, with the outer bristle slightly forward; no sternopleural bristle. Metanotum without black markings. Abdomen about as broad as long; second segment slightly longer than the third; third and fourth segments of equal length; ovipositor sheath slightly longer than abdomen. Wing pattern golden-yellow edged with deep brown; hyaline costal area continuous to and including the second basal cell; inverted ∇ complete, disconnected, arms brown, pale yellow at apex, where they join.

Length 7 mm. without ovipositor sheath, which is 2.5 mm.; wing 7 mm.

Described from two females.

Type, Cat. No. 50516, U. S. N. M., Cabima, Panama, May

17, 1911, August Busck collector. Paratype, Bonito Prov., Pernambuco, Brazil, 1.2.83.

Host unknown.

Adult collected on cotton.

Anastrepha pallens Coquillett.

(Plate 20, fig. 11.)

This species was originally described by Coquillett (6, p. 35) in 1904. Hendel (14, p. 14-15) mentioned it in his revision. It is distinguished from all the other species of the genus by the wing pattern, thoracic markings, and tri-colored scutellum.

Described from a male, Brownsville, Tex., June. Other specimens in the U. S. National Collection are from Brownsville, Tex., Aug. 8, 1931; Mission, Tex., no date, C. J. Volz collector; Mission, Tex., Aug. 11, 1931; Weslaco, Tex., Feb. 10, 1932, G. V. Harren collector; Donna, Tex., reared May 16, 1932, J. W. Monk collector; and Tegucigalpa, Honduras, no date, F. J. Dyer collector.

Reared from berries of *Bumelia angustifolia*. Some specimens were captured in traps in trees of grapefruit and orange.

Female.—Very much like the male except in the following characters: Near the posterior margin on the dorsum of the thorax there are usually three blackish spots but sometimes the middle one is missing. Each abdominal segment is paler yellow along the apical edge. Ovipositor sheath slightly enlarged on the basal half, cylindrical, slender on apical half, blackish at the tip.

Length 6 mm. without ovipositor sheath, which is 3 mm.; wing 7 mm. long.

Anastrepha braziliensis, n. sp.

(Plate 20, fig. 6.)

Male and female.—Deep golden yellow, subshining, with a faint infuscation at each posterior angle of the thorax, where the scutellum joins; humeri, pleural suture, a narrow line on each side of the dorsum from the suture to the posterior edge, a narrow, indefinite central stripe which is broader posteriorly, and the scutellum all lemon-yellow. All bristles black; the fine short hairs on dorsum of thorax and abdomen pale yellow. Antennae reaching about three fourths the distance to the oral margin; third joint about two and one half times as long as wide; arista long, blackish, faintly pubescent, base yellow and slightly thickened; frontal bristles varying from three to five pairs; two reclinate bristles on each side above the frontals, the upper bristle smaller; ocellar triangle black with two very small ocellar bristles; palpus fairly broad with yellow hairs, the apical ones sometimes black. Prescutellar row with the dorsocentral directed forward; metanotum and postscutellum slightly darker yellow, with a broad black stripe on each side. Abdomen of male not much longer than broad; the last segment about one third longer than the preceding. In the female the

abdomen about as broad as long and segments subequal. Wing pattern more brown than yellow; hyaline costal area continuous and including the second basal cell; the inverted V decidedly disconnected, complete with the arms faintly connected and reaching the third vein; the V dark brown with a faint tinge of yellow at the apex.

Length of female 5-6 mm. without ovipositor sheath, which is 1.75-2 mm.; wing 6-7 mm.

Male 5.5-6 mm.; wing 5-6 mm.

Described from 83 specimens. Minas Geraes, Brazil, Dec., 1931. Kisliuk and Cooley collectors, and Vicosia, Minas Geraes, Brazil, E. J. Hambleton collector, reared from grapefruit 1930.

Type, female, allotype, male, Cat. No. 50518, U. S. N. M.

Reared from grapefruit 1930; also on plum, Minas Geraes, Brazil, Dec. 19, 1931, Kisliuk and Cooley collectors.

Anastrepha punctata Hendel.

(Plate 20, fig. 12.)

This was originally described by Hendel (*17*, p. 19) in 1914 in his revision. C. R. Fischer (*12*, p. 83) in 1933 gave a redescription. The species is distinguished from all the other species of the genus by the wing pattern and the spots on the dorsum.

Described from S. Bernardino, Paraguay, March. Specimens in the U. S. National Collection are from Sao Paulo, Brazil, December 27-28, 1931, M. Kisliuk and C. E. Cooley collectors. The latter specimens were captured on plum and the leaf of Solanum.

Host unknown.

The types are in the Hungarian National Museum.

Anastrepha hendeli, n. sp.

(Plate 21, fig. 1.)

Male and female.—Entire insect honey yellow, translucent, with a black spot near each posterior angle of the thorax where the scutellum joins. All bristles yellow with their apices brownish; the short fine hair covering the dorsal surface of the thorax and abdomen yellow. Antenna reaching three fourths distance to oral margin; third joint twice as long as wide with the apical end slightly narrower and rounded at apex; arista long, slender, faintly pubescent, brownish; basal portion yellow and slightly swollen. Palpus strongly curved on basal side, with the bristles brownish. Usually three pairs of frontal bristles (sometimes two or four bristles on one side), a reclinate pair on each side of the upper part of the front; inner verticals large; the outer verticals somewhat shorter; postvertical pair present; ocellar triangle small, black, with three yellow ocelli. Prescutellar row of four bristles, outer ones slightly forward;

other bristles normal; central thoracic stripe yellowish white, bifid at base and reaching almost to apical edge of thorax; each lateral stripe pale, reaching forward to transverse suture; humerus pale yellow with the color extending backward but not reaching the transverse suture; one sternopleural bristle; scutellum with four large bristles; metanotum deep yellow but without black markings. Abdomen about as broad as long.

In the female the ovipositor sheath is about as long as the abdomen, with the apex narrowly infuscated; fifth abdominal segment narrower than the fourth. Wing pattern honey-yellow with some gray along outer edge of the diagonal band just beyond tip of anal cell, at apex of second longitudinal vein, at tip of third vein, and end of each arm of the inverted V; the hyaline costal area extending diagonally across the wing including the entire second basal cell; inverted V decidedly disconnected from the diagonal yellow band and the two arms feebly connected at the third longitudinal vein; a black spot at the costal end of the humeral crossvein, one at costal end of auxiliary vein, one at base of fourth vein, and another at bifurcation of second and third veins; third longitudinal vein arcuate opposite the posterior crossvein. In the male the fifth abdominal segment nearly twice as wide as the fourth; four marginal macrochaetae on each side.

Length of female 5 mm. without ovipositor sheath, which is 1.9 mm.; wing 6 mm.

Male 5 mm.; wing 5.9 mm.

Described from 8 specimens. Sao Paulo, Brazil, December 26-28, 1931, Max Kisiuk, Jr., and C. E. Cooley collectors.

Holotype, female, allotype, male, Cat. No. 50517, U. S. N. M. Paratypes 1 male and 5 females.

Related to *punctata* Hendel.

Host unknown.

Adults collected on leaf of plum and leaf of persimmon.

Anastrepha nigripalpis Hendel.

(Plate 21, fig. 6.)

This beautiful large species was originally described by Hendel (*14*, p. 18) in 1914. It is distinguished from all other species of the genus by the wing pattern and the black marking on the palpi.

Described from (female), Bolivia-Mapiri, S. Antonio, February, 1,000 m; (male) Peru, Meshagua, Urubambafluss, October.

Host unknown.

The female type is in the collection of Dr. F. Hendel and was examined by the writer. The male is in the Dresden Museum.

Anastrepha obscura Aldrich.

(Plate 21, fig. 2.)

This species was originally described by Aldrich (2, p. 5) in 1925 and is distinguished from all other species by the wing pattern and the large size.

Described from Maraval, Trinidad, W. Büthn collector. There are also additional specimens from Trinidad, F. W. Urich collector, in the U. S. National Collection.

Reared in February and March, 1918, from larvae in *Lucuma multiflora* by W. Büthn.

Types are in the U. S. National Collection and were examined by the author.

Anastrepha bivittata Macquart.

(Plate 21, fig. 7.)

This species was originally described by Macquart (24, p. 379 (222)) in 1843 as a species of *Urophora*. Loew (20, p. 231) in 1873 placed the species in *Acrotoxa*. Prof. Bezzi (3, p. 284) in 1909 placed the species in *Anastrepha*; then Hendel (14, p. 16) in 1914, in his revision, used the same generic name as Bezzi. The species is distinguished from all the other species of this genus by the unusual wing pattern.

Described from a single specimen from an unknown locality. The species is not represented in the U. S. National Collection. I know this species only from the description and the picture of the wing by Macquart. It is a very distinct species.

Host unknown.

The type is in the Museum at Para, Brazil, according to Prof. M. Bezzi.

Anastrepha hamata Loew.

(Plate 21, fig. 3.)

This species was originally described by Loew (20, p. 229) in 1873 in the genus *Trypeta*. Bezzi (3, p. 284) in 1909 placed it in the genus *Anastrepha*. In his revision of this group in 1914 Hendel (14, p. 14-15) retained it in this latter genus. Distinguished from the other species by the wing pattern.

Described from Brazil (no date). Specimens in the U. S. National Collection are from Brazil, A. Compere collector, and a specimen from the Amazon River, Aiary to Manaus, Brazil. Sept. 20-21, 1930, Holt, Blake, and Agostini collectors.

Host unknown.

The location of the type is unknown.

Anastrepha ocesia Walker.

(Plate 21, fig. 8.)

This species was originally described by Walker (32, p. 1016) in 1849 in the genus *Trypeta*. Loew (20, p. 337) in 1873 refers the species to his genus *Acrotoxa*. Bezzi (3, p. 283-285) in 1909 placed it in the genus *Anastrepha*. Hendel (14, p. 14, 15) in 1914 placed this species in the same genus as Bezzi. The species is distinguished from all the other species of the genus by the wing pattern.

Described from Jamaica. Not represented in the U. S. National Collection.

Host unknown.

Type, female in the British Museum.

The writer had some difficulty in distinguishing this species from the description. Walker (32, p. 1016) states that the "sucker" (proboscis) and the palpi are pitchy. Miss D. Aubertin, of the British Museum, furnished a photograph of the wing and in a note stated that the "proboscis and palpi are tawny." Apparently Walker's statement is incorrect.

Anastrepha tripunctata van der Wulp.

(Plate 21, fig. 4.)

This species was originally described by van der Wulp (36, p. 405) in 1899. Bezzi (3, p. 284-286) in 1909 redescribed the species in his revision. Hendel (14, p. 14-16) in 1914 also mentioned the species in his revision. This species is distinguished from all the other species in the genus by the black spot at the apex of the scutellum, and the wing pattern.

Described from Mexico.

Host unknown.

Types in the British Museum.

Anastrepha cryptostrepha Hendel.

(Plate 21, fig. 9.)

This species was originally described by Hendel (14, p. 14, 17) in 1914. It is distinguished from all the other species in the genus by the combination of unusual wing pattern and the ovipositor sheath, which is 4 mm. long. (See *conjuncta*, a much larger species.)

Described from Meshagua, Urubamba River, Peru, October.

Host unknown.

The type male is in the Dresden Museum and the type female in the collection of Dr. Hendel. The female was examined by the writer.

Anastrepha conjuncta Hendel.

This species which was originally described by Hendel (14, p. 14, 17) in 1914, is distinguished from all the other species by the wing pattern. (See *cryptostrepha*, a much smaller species.)

Described from Mapiri, Sarampioni, Bolivia; January, 700 m.

Host unknown.

Type in the Dresden Museum.

I did not see the type of this species but according to Dr. Hendel it is larger (13 mm.) than *cryptostrepha*. The wing pattern is quite similar but the curve of the fourth longitudinal vein is much broader in *conjuncta*.

Anastrepha sylvicola Knab.

(Plate 21, fig. 5.)

This species was originally described by Knab (17, p. 146) in 1915 and is distinguished from all other species by the wing pattern and the red bristles on head and thorax.

Described from Trinidad, West Indies, June, 1914, F. W. Urich collector. There are other specimens in the U. S. National Collection from Port of Spain, Trinidad, October 29, 1931, "resting on guava," Kisliuk and Cooley collectors.

Rared from unknown fruit in forest.

Types in the U. S. National Collection were examined by the writer.

Anastrepha urichi, n. sp.

(Plate 22, fig. 1.)

Female.—Deep luteous, subshining, with the surface of the thorax and abdomen covered with short golden-yellow hair; thorax and abdomen of uniform color. All bristles reddish yellow with their tips darkened. Antenna reaching three fourths the distance to the oral margin; third joint two and one half times as long as wide, with the apex rounded; arista very long, slender, faintly pubescent, brownish; basal portion yellow and slightly swollen. Palpus dull luteous, broadly infuscated along the apical edge; proboscis badly stained; bristles yellow. Four pairs of frontal bristles; a large reclinate bristle on each side of the upper part of the front; ocellar triangle very small, black, with three yellow ocelli. Thorax with prescutellar row with the outer or dorsocentrals slightly forward; no sternopleural bristle; scutellum with four bristles; metanotum and postscutellum reddish yellow without black markings. Abdomen about as broad as long; last two segments of equal width and each segment about three fourths the width of the preceding segment; ovipositor sheath deep reddish brown, slightly darkened at tip, about one and one half times as long as the abdomen; basal two thirds much thicker than the remaining portion, tapering very slightly toward apical portion; apical third quite slender and of equal diameter to the tip. Wing pattern deep yellowish brown edged with a much darker brown; hyaline costal area quite pointed and not quite reaching the

third vein; inverted ∇ quite broad, mostly dark brown and broadly connected at apex with main pattern; broad inner arm of ∇ connected, along fourth vein, with main pattern; an elongated hyaline spot in middle of first basal cell; second basal cell brownish yellow.

Length 8 mm. without ovipositor sheath, which is 4.5 mm. long. Wing 9 mm. long.

Described from one specimen labeled "Trinidad, F. W. Ulrich, v. v. 14/6/19."

Host unknown.

Type, female, Cat. No. 50507, U. S. N. M.

Anastrepha flavipennis, n. sp.

(Plate 22, fig. 6.)

Male and female.—Entire insect honey yellow, translucent. All bristles reddish yellow; the fine short hair covering dorsal surface of thorax and abdomen golden yellow. Antenna reaching almost to oral margin; third joint slightly narrowed and rounded at apex; two and one half times as long as the second; arista slender, dark brown and short pubescent; base yellow and slightly swollen. Palpus and all its bristles yellowish. Three pairs of frontal bristles in the male, four pairs in the female. Each with two pairs of ocellar bristles, reclinate. Prescutellar row of four bristles almost in a straight line; sternopleural absent. Metathorax pale yellow.

In the female the abdomen is about as long as wide; ovipositor almost as long as abdomen. Wing with the hyaline costal area interrupted on third vein, interruption about one half length of anterior crossvein; an elongated hyaline spot in first basal cell just before base of discal; second basal cell deep yellow like main pattern; width of apical crossband about equal to length of anterior crossvein; inverted ∇ complete, broadly connected at its apex with main pattern; stigmal area deep golden brown.

In the male the wing is the same except that it is slightly narrower and the stigmal area is only slightly infuscated with brown. Abdomen a little longer than broad; last segment twice as wide as preceding.

Length of female 7 mm., without ovipositor sheath; ovipositor 2.5 mm.; wing 8 mm. Male 7.8 mm; wing 6-7 mm.

Described from two specimens, male and female, from Boa Vista, Brazil, ♂-20, Jan. ♀-5 Feb., C. H. T. Townsend collector; one male from Corozal, Canal Zone, Panama, at light, C. P. Crafts collector; one male from Cãno Saddle, Gatun Lake, Panama, August, 1923, R. C. Shannon collector.

Host unknown.

Type, female, allotype, male, Cat. No. 50509, U. S. N. M.

Anastrepha trinidadensis, n. sp.

(Plate 22, fig. 2.)

Male and female.—Entire insect honey yellow, translucent. All bristles black; the short fine hair covering the dorsal surface of the thorax and abdomen yellow; the longer hairs on the sides of the abdomen blackish. Antenna reaching three fourths distance to oral margin; third joint slightly narrower and rounded at apex, two and one fourth times as long as second joint; arista long, slender, faintly pubescent, brown; basal portion yellow and slightly swollen. Palpus broad, bristles at apex black. Frontal bristles varying from three to five pairs. Prescutellar row with the dorsocentrals a little before the row; sternopleural bristle yellow, hair-like; metathorax deep yellow, with two black stripes. In the female the abdomen is about as long as broad; ovipositor robust, cylindrical, as long as last three abdominal segments. Wing with an interruption on the third vein equal to half the length of anterior crossvein; hyaline costal area reaching the third vein, with a slight trace of a constriction on the second vein; inverted V mostly brown, yellowish at its apex, where it is narrowly connected with the main pattern; width of apical crossband almost equal to length of anterior crossvein; stigmal area dark brown, the brown extending slightly behind the first vein.

In the male the abdomen is slightly longer than broad; the last segment about one and one half times as wide as preceding; wing like that of the female.

Length of female 6 mm., without ovipositor sheath; ovipositor 1.8 mm.; wing 7 mm. Male 6.5 mm.; wing 7 mm.

Described from 52 specimens.

Type, female, allotype, male, Cat. No. 50505, U. S. N. M.

Localities: Union Hall, St. Madeleine, Trinidad, B. W. I., October 13, 1931; Cedar Hill, St. Madeleine, Trinidad, B. W. I., October 15, 1931; Princes Town, Trinidad, B. W. I., October 25, 1931; St. Mary, Trinidad, B. W. I., October 24, 1931; Tabaquite, Trinidad, October 20, 1931; Carnegie, Trinidad, October 13, 1931; Kisliuk and Cooley collectors.

Host unknown.

Adults collected on guava, sapodilla, *Cordia cylindrostachta*, and *Spondias ciruela*.

This species is very close to *ethalea* except in size and may ultimately prove the latter to be a variable species in size.

Anastrepha ethalea Walker.

(Plate 22, fig. 7.)

This species was originally described by Walker (32, p. 1015) in 1849 in the genus *Trypeta*. Loew (20, p. 335) in 1873 referred it to *Acrotoga*. Bezzi (3, p. 283) in 1909 referred it to the genus *Anastrepha*. Hendel (14, p. 14) in 1914 referred the species to this latter genus. The species may be distinguished by the wing pattern.

Described from Para, no date. Specimens in the U. S. National

Collection are from Cedar Hill, St. Madeleine, Trinidad, B. W. I., October 15, 1931, M. Kisliuk and C. E. Cooley collectors. Specimens were collected on guava and sapodilla.

Host unknown.

Type in the British Museum.

Francis Walker (32, p. 1015) in 1849 states that the "sucker (proboscis) is pitchy." Miss D. Aubertin of the British Museum furnished the writer with a photograph of the wing of the type and stated that "the proboscis in *ethalea* appears to be brown, but it is rather overgrown with fungus." The specimens mentioned above have the proboscis deep yellow.

The type is 10 mm. long without the ovipositor sheath, which is 3 mm.

Anastrepha acidusa Walker.

(Plate 22, fig. 3.)

This species was originally described by Walker (32, p. 1014) in 1849 in the genus *Trypeta*. Loew (20, p. 231) in 1873 erected the genus *Acrotoxa*. Bezzi (3, p. 284) in 1909 placed the species in the genus *Anastrepha*. Hendel (14, p. 15) in 1914 also referred it to the latter genus. Sein (29, p. 187) in 1933 described the new var. *mombinpraeoptans*, which is a synonym. This species may be distinguished from all the other species of the genus by the wing pattern and the ovipositor sheath.

Described from Jamaica, no date. Specimens in the U. S. National Collection are from Tapia, Panama, June 15, 1922, James Zetek collector; Ancon, Canal Zone, and Panama City, April 11 and May 2-3, 1926, C. T. Greene collector; Costa Rica, no date, Boston No. 404; Damien, Haiti, July 30, 1930, E. Ducasse collector; Pétionville, Haiti, July 2, 1931, M. Kisliuk and C. E. Cooley collectors; Hope Gardens, Jamaica, June 16, 1931, Kisliuk and Cooley collectors; Rio Piedras, P. R., July 11, 1931, Oakley, Berry, and Anderson collectors; near Castria, St. Lucia, B. W. I., Sept. 12, 1931, Micaud, St. Lucia, B. W. I., Sept. 10, 1931, Stapleton, St. Kitts, B. W. I., Aug. 10, 1931, Gingerland, Nevis, B. W. I., Dominica, B. W. I., Sept. 19-21, 1931, Clark Hall, near Layon, Dom. Rep., near Trinite, Martinique, F. W. I., Lamentin, Martinique, F. W. I., all Sept. 3, 1931, Kisliuk and Cooley collectors; Loiza, P. R., July 18, 1931, Oakley and Anderson collectors; Bayamon, P. R., Aug. 5, 1931, R. G. Oakley collector; Ponce, P. R. May 10, 1932, R. G. Oakley, collector; Aibonito, P. R., Sept. 5, 1931, Oakley and Mills collectors; Mayaguez, P. R., Sept. 4, 1931, Oakley and Mills collectors; San Turce, P. R., Aug. 3, 1932, Kisliuk and Cooley collectors; Weslaco, Tex., January 4, 1933, G. V. Harren collector; and Key West, Fla., Oct., 1932, R. Hart collector. The above specimens were captured on the leaves of cocoa,

cotton, cacao, guava, and almond, and on the fruit of guava, manjack (*Cordia sp.*), and pomarosa.

Reared from the following fruits: plum (*Spondias mombin* and *S. lutea.*), rose apple or pomarosa (*Eugenia jambos*), mango (*Mangifera indica*), and guava (*Psidium guajava*).

Type in the British Museum.

The writer had for study specimens compared with the type, also a photograph of the wing and critical notes on the type which were kindly furnished by Miss D. Aubertin of the British Museum. This species appears to be the common form in the West Indies. For a long time it was considered a synonym of *fraterculus*. After a careful study of the type of *A. fraterculus* Wied. and the above photograph and notes on *acidusa* Walker, I am convinced that it is a distinct species.

Anastrepha obliqua Macquart.

(Plate 22, fig. 8.)

This species was originally described by Macquart (23, p. 464) in 1835 in the genus *Tephritis* and in 1843 (24, p. 382) he described the male in the same genus. Loew (20, p. 231) referred the species to *Acrotoxa*. Bezzi (3, p. 283) in 1909 referred the species to *Anastrepha*. Hendel (14, p. 13-15) in 1914 used the same genus as Bezzi. This species is distinguished from all other species of this genus by the wing pattern.

Described from Cuba, no date. Specimens in the U. S. National Collection are from Cãno Saddle, Canal Zone, May 2, 1923, R. C. Shannon collector; La Ceiba, Honduras, no date, E. Kostal collector; and Barro Colorado Island, Canal Zone, Sept. 1930 and 1933, James Zetek collector.

Reared from fruit of *Quararibea asterolepis* Pittier by J. Zetek.

The location of the type is unknown.

The black markings on the metanotum are variable. In some specimens the metanotum is entirely yellow.

Anastrepha xanthochaeta Hendel.

This species was originally described by Hendel (14, p. 18) in 1914. It is distinguished from all other species of the genus by the wing pattern and the large bristles of the head, thorax, and legs, which are reddish yellow.

Described from Rio Grande do Sul, Brazil.

Host unknown.

The type is in the Wiener Hof-Museum. This species was not seen by the writer.

Anastrepha lambda Hendel.

(Plate 22, fig. 4.)

This species was originally described by Hendel (*14*, p. 17) in 1914 and is distinguished from all other species by the wing pattern and by its large size. Length 9 mm. without ovipositor sheath, which is 2.5 mm.

Described from Peru, Pini-Pini.

Host unknown.

Type in the Dresden Museum.

Anastrepha pseudoparallela Loew.

(Plate 22, fig. 9.)

This species was originally described by Loew (*20*, p. 230) in 1873 in the genus *Trypeta* but in the same paper (*20*, p. 227) he had erected the genus *Acrotoxa*. Bezzi (*3*, p. 283-285) in 1909 placed this species in *Anastrepha* and Hendel (*14*, p. 14, 15) in 1914 used this latter genus. The species is distinguished from all other species by the wing pattern and the ovipositor sheath.

Described from Brazil, no date. Specimens in the U. S. National Collection are from Sao Paulo, Brazil, no date; Trinidad, June 18, 1917, F. W. Urich collector; and Rurrenabaque Beni, Bolivia, October, 1921, W. M. Mann collector.

Host unknown.

Location of type unknown.

The metanotum is entirely yellow.

Anastrepha fraterculus Wiedemann.

(Plate 22, fig. 5.)

This species was originally described by Wiedemann (*34*, p. 524-525) in 1830 in the genus *Dacus*. Loew (*19*, p. 70) in 1862 described *Trypeta unicolor*, which is a synonym. Schiner (*28*, p. 264) in 1868 described *Anastrepha munda*, which is also a synonym of *fraterculus*. Loew (*20*, p. 222) in 1873 redescribed *fraterculus* and makes his *unicolor* a synonym. Loew (*20*, p. 227) placed the above species in his new genus *Acrotoxa*. Weyenbergh (*33*, p. 165) in 1874 described *frutalis*. Van der Wulp (*36*, p. 404-405) in 1899 referred *fraterculus* to *Anastrepha*. Bezzi (*3*, p. 283) in 1909 also used this latter genus. Hendel (*14*, p. 18) in 1914 also used *Anastrepha*. Brèthes (*5*, p. 59) in 1914 made *frutalis* Weyenb. a synonym. This species may be distinguished from all the other species of the genus by the wing pattern and the ovipositor sheath. The female is exactly like the male except in the sexual characters. The apex of the inverted V is broadly disconnected from the main pattern. The ovipositor sheath is about two thirds as long as the abdomen, or about 2 mm. long.

Described from Sao Paulo, Brazil, no date. Specimens in the U. S. National Collection are from Vicoso, Minas Geraes, Brazil, 1930, E. J. Hambleton collector; Sao Goncalo, Brazil, Nov. 23, 1931, near Tabera, Pernambuco, Brazil, Dec. 4, 1931, St. Mary, Trinidad, B. W. I., Oct. 24, 1931, Hermitage, St. Madeleine, Trinidad, Oct. 15, 1931, San Fernando, Trinidad, Oct. 24, 1931, Port of Spain, Trinidad, Oct. 29, 1931, all collected by M. Kisliuk and C. E. Cooley; Higuito, Costa Rica, no date, Pablo Schild collector; and Guatemala, March 22, 1931, D. M. Bates collector. Specimens collected on *Spondias ciruela*, sapodilla, guava, and Natal orange.

Rearing from *Inga*, and grapefruit.

The type is in the Vienna Museum and was examined by the writer. Dr. H. Zerny of that museum loaned this type to Dr. Aldrich in order that the writer might make a careful examination of it. (The specimen was in remarkable condition considering that it was described in 1830.) *A. fraterculus* of authors included four species.

The type of *unicolor* Loew is in the Museum of Comparative Zoology, Cambridge, Mass., and was examined by the writer.

Anastrepha townsendi, n. sp.

(Plate 22, fig. 10.)

Female.—Dull, luteous yellow. Bristles black, except one large one on the cheek and sternopleural; the short hair covering dorsal surface of thorax and abdomen yellow. Antenna reaching almost to oral margin; third joint slightly narrower at apex, rounded, and three times as long as second segment; arista long and slender, dark brown, faintly pubescent; basal portion slightly thicker and yellow. Palpus yellow, bristles yellowish red. Three pairs of frontal bristles; two pairs of orbitals, upper pair about half the size of lower pair. Prescutellar row with the outer bristle slightly forward of the row; one sternopleural, small, reddish-yellow, hair-like. Metathorax deep reddish yellow, without black markings. Abdomen slightly longer than broad, last segment slightly wider than preceding. Ovipositor sheath almost as long as head and thorax together, enlarged on basal half, then cylindrical for a short distance and slightly widened at the apex. Wing pattern mostly deep golden yellow; hyaline costal area interrupted on the third vein for a distance equal to one half the length of anterior crossvein; width of apical crossband almost equal to length of anterior crossvein; inverted V complete, broadly disconnected from the main pattern; stigmal area long, narrow, deep brown, this color extending a little behind the first vein.

Length of female 10 mm. without ovipositor sheath, which is 5.4 mm. long; wing 10 mm.

Described from one specimen, Boa Vista, Brazil, X 8, C. H. T. Townsend collector.

Type, female, Cat. No. 50504, U. S. N. M.

Host unknown.

Anastrepha pallidipennis, n. sp.

(Plate 23, fig. 1.)

Female.—Very much like *A. zeteki*, n. sp., but differing in the following characters. Entire insect slightly darker. Dorsum of thorax with a broad, pale, central stripe extending from front edge to a short distance before scutellum; posterior end wider and bifid; a narrow, pale yellowish lateral stripe extending from posterior angle to transverse suture; all bristles black; the postalar bristle in the same line with the two acrostichals; a single dorsocentral bristle on each side decidedly forward of the acrostichals; no sternopleural bristle. Three frontal bristles on one side, four on the other. Third abdominal segment wider than fourth. Ovipositor sheath very slender, cylindrical, a little enlarged at the base and slightly shorter than the remainder of the insect. Wing pattern pale yellow; hyaline costal area broadly separated on the third vein from the rest of the first basal cell, the basal fourth of the discal, and the entire second basal cell; the inverted V mostly yellow, reaching the third vein and broadly separated from the diagonal yellow band.

Length 6 mm. without ovipositor sheath, which is 6 mm.; wing 11 mm.

Described from one specimen from Medellin, Colombia, Aug. 28, 1930, C. H. Ballou collector. Captured on *Passiflora quadrangularis* Col. 83.

Type, female, Cat. No. 50512, U. S. N. M.

Host unknown.

Anastrepha soluta Bezzi.

(Plate 23, fig. 6.)

This species was originally described by Bezzi (3, p. 284) in 1909 as a new variety but the present writer considers it a good species. It is distinguished from all other species by the wing pattern.

Described originally from Sao Paulo, Brazil, no date. Specimens in the U. S. National Collection are from the same locality and were determined by Prof. Bezzi.

Reared from pitanga (*Eugenia uniflora*) and from Ameixa do Para.

Types in the collection of the late Prof. M. Bezzi in Milan.

Anastrepha barnesi Aldrich.

(Plate 23, fig. 2.)

This species was originally described by Aldrich (2, p. 3) in 1925. It can be distinguished from all other species by the wing pattern and the very long ovipositor sheath, which is 9.5 mm.

Described from Cayuga, Guatemala, Feb. and March, W. Schaus and J. Barnes collectors.

Host unknown.

The types are in the U. S. National Collection and were examined by the writer.

Anastrepha consobrina Loew.

(Plate 23, fig. 7.)

This species was originally described by Loew (20, p. 230) in 1873 in the genus *Acrotoxa*. Bezzi (3, p. 283) in 1909 referred the species to the genus *Anastrepha*. Hendel (14, p. 14, 15) in 1914 referred it to the same genus. This species can be distinguished from all the other species of this genus by the wing pattern and the ovipositor sheath.

Described from Brazil, no date. Specimens in the U. S. National Collection are from Estado de Rio, Brazil, Dr. C. Lima collector (through M. Kisliuk and C. E. Cooley).

Reared from *Passiflora edulis*, January, 1930.

Location of type unknown.

Anastrepha chiclayae, n. sp.

(Plate 23, fig. 3.)

Male and female.—Deep golden-yellow, with the head, humeri, narrow band along pleural suture, and scutellum pale lemon yellow. All bristles black; short fine hairs on dorsal surface of the thorax and abdomen pale yellow. Antenna reaching, in the male one-half, and the female two thirds, the distance to the oral margin; third joint (male and female) slightly more than twice as long as wide; arista slender, dark, with short pubescence, the base yellow and slightly swollen; palpus broad with pale hairs which are darker at the apex; three pairs of frontal bristles; a reclinate pair on each side of the upper part of the front (in the male there are two additional large black bristles on the left side of the front just below this reclinate pair); ocellar triangle small, black (in the female there is one large bristle to the right of the triangle), ocellar bristles small. Prescutellar row with the dorsocentrals set forward (in the female the acrostichal pair entirely wanting), no sternopleural bristle; metanotum golden yellow without black markings. Wing pattern mostly yellow; hyaline costal area continuous to and including the second basal cell; inverted V complete, narrowly disconnected from the main pattern (in one male the V narrowly connected).

Male abdomen about twice as long as broad; last segment one and one fourth times as long as the preceding. Female abdomen nearly as broad as long, the last three segments of nearly equal length; ovipositor sheath about as long as abdomen, without black at tip.

Length of female 6.5 mm. without ovipositor sheath, which is 2.25 mm.; wing 7 mm.

Length of male 6 mm.; wing 6 mm.

Described from 4 specimens: Hac. Ouefe, J. R. Ugaz, Chiclaya, Peru, March 21, 1932, Kisliuk and Cooley collectors.

Type, female, allotype, male, Cat. No. 50515, U. S. N. M.

Host unknown.

Adults collected on leaf of caracucho.

Anastrepha parallela Wiedemann.

(Plate 23, fig. 8.)

This species was originally described by Wiedemann (37, p. 515) in 1830 in the genus *Dacus*. Loew (20, p. 229) in 1873 placed it in the genus *Acrotoxa*. Bezzi (3, p. 283) in 1909 and Hendel (14, p. 13, 15) in 1914 both placed the species in *Anastrepha*. It is distinguished by the wing pattern.

Described from Brazil. Specimens in the U. S. National Collection are from S. Bernardino, Paraguay, no date, K. Fiebrig collector; and Sao Paulo, Brazil, Dec. 28, 1931, on sapodilla, Kisliuk and Cooley.

Host unknown.

The types are in the Vienna Museum and the Frankfort Museum.

Anastrepha integra Loew.

(Plate 23, fig. 4.)

This species was originally described by Loew (20, p. 230) in 1873 in the genus *Acrotoxa*. Bezzi (3, p. 283) in 1909 referred it to *Anastrepha*, and Hendel (14, p. 13-15) 1914 does likewise. The species is distinguished from all others by the wing pattern and the size of the ovipositor sheath.

Described from Brazil, no date. Specimens in the National Collection are from Verdant Vale, Ariam, Trinidad, B. W. I., April, 1912, F. W. Urich collector. One specimen captured 3 miles south of La Vega, Dominican Republic, July 20, 1931, Kisliuk and Cooley collectors. A specimen was collected on the leaf of rose apple.

Host unknown.

Types are in the Berlin Museum.

Anastrepha schausi Aldrich.

(Plate 23, fig. 9.)

This species was originally described by Aldrich (2, p. 3) in 1925. This male can be distinguished from that of all other species known to the writer by the conspicuous black and white border around the expanded edge of the mouth. The female is unknown.

Described from Juan Vinas, Costa Rica, Jan. 11, W. Schaus and J. Barnes collectors.

Host unknown.

The type is in the National Collection and was examined by the writer.

Anastrepha concava, n. sp.

(Plate 23, fig. 5.)

This specimen is so damaged, abdomen missing, that I can not tell the sex. Its wing pattern is so entirely different from that of any known species that I think it worth while to describe the fragment. Perhaps later on a good specimen may be captured.

Head and thorax luteous, subshining; all short hair pale yellow; all bristles black. Five pairs of frontals; one pair of orbitals. Antenna reaching three fourths the distance to oral margin; third joint tapering slightly toward apex, where it is rounded; third joint about twice as long as second, with a yellow bristly hair on under side near apex; arista long, brown with yellow enlargement at base. Palpus broad, with very faint infuscation on apical half (this infuscation may be only a stain); proboscis luteous.

Wing pattern almost entirely dark brown; small amount of yellow at bases of marginal and first basal and entire anal cells. Inverted ∇ very broadly connected at apex with main pattern. Hyaline costal area broadly interrupted on third vein, interruption about as long as anterior crossvein. The species would be from 10 to 12 mm. long without the ovipositor sheath. Wing 11 mm. long. Length of head, thorax, and scutellum 6.5 mm. Abdomen missing.

Locality.—Close's, Cãno Saddle, C. Z., Sept. 1923, M. F. Close, collector.

Type, Cat. No. 50520, U. S. N. M. Host unknown.

Anastrepha munda Schiner.

This species was originally described by Schiner (28, p. 264) in 1868 in the above genus. Bezzi (3, p. 283) in 1909 considered this species a synonym of *fraterculus* Wied. Schiner compared his specimen with *unicolor* Loew, which Loew (20, p. 223) admitted to be a synonym of *fraterculus* Wied. The writer examined the types of *fraterculus* and *unicolor* and found that they are identical. Hendel (14, p. 18) in 1914 and Carlos R. Fischer (11, p. 309) in 1932 both considered the species to be a synonym of *obliqua* Macq. I can not give a definite opinion as I have not seen a specimen of *munda*.

Described from South America. The type is in the Vienna Museum. Host unknown.

Anastrepha fenestrata Lutz and Costa Lima.

This species was originally described by Lutz and Costa Lima (21, p. 8) in 1918. From the description I am unable definitely to place the species.

Described from Amazonia, no date. Host unknown.

Type in the Museum of Instituto Oswaldo Cruz. at Rio de Janeiro. Not seen by the writer.

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EXPLANATION OF PLATES.

Plate 19.

1. *Anastrepha serpentina* Wiedemann, female (Peru).
2. " *ornata* Aldrich, female (type) (Banos, Or. Ecuador).
3. " *daciformis* Bezzi, female (Sao Paulo, Brazil).
4. " *macrura* Hendel, female (type) (Paraguay).
5. " *robusta* Greene, male (type) (Cordoba, Mexico).
6. " *cordata* Aldrich, female (type) (British Honduras).
7. " *grandis* Macquart, male (Brazil).
8. " *striata* Schiner, female (Ancon, C. Z.).
9. " *atrigena* Hendel, female (Brazil).
10. " *tricincta* Loew, female (Cuba).
11. " *longimacula* Greene, female (type) (Hope, Jamaica).
12. " *suspensa* Loew, female (Mayaguez, P. R.).

Plate 20.

1. *Anastrepha peruviana* Townsend, female (type) (Chosica, Peru).
2. " *distincta* Greene, male (type) (Chiclaya, Peru).
3. " *ludens* Loew, male (Matamoros, Mex.).
4. " *zeteki* Greene, female (type) (Barro Colorado Isl., C. Z.).
5. " *similis* Greene, female (type) (Cabima, Panama).
6. " *braziliensis* Greene, male (type) (Brazil).
7. " *distans* Hendel, female (Sao Paulo, Brazil).
8. " *panamensis* Greene, male (paratype) (Barro Colorado Isl., C. Z.).
9. " *passiflorae* Greene, female (type) (Barro Colorado Isl., C. Z.).
10. " *leptozona* Hendel, female (Bahia, Brazil).
11. " *pallens* Coquillett, female (Mission, Texas).
12. " *punctata* Hendel, female (Sao Paulo, Brazil).



1 SERPENTINA ♀



7 GRANDIS ♂



2 ORNATA ♀



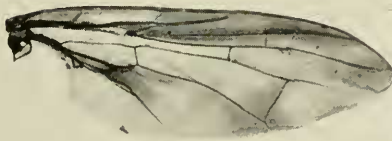
8 STRIATA ♀



3 DACIFORMIS ♀



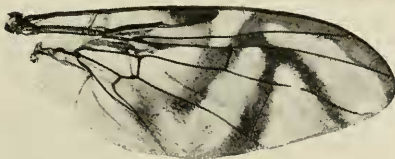
9 ATRIGONA ♀



4 MACRURA ♀



10 TRICINCTA ♀



5 ROBUSTA ♂



11 LONGIMACULA ♀



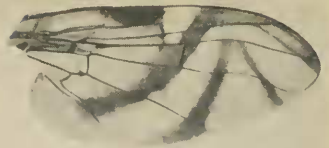
6 CORDATA ♀



12 SUSPensa ♀



1 PERUVIANA ♀



7 DISTANS ♀



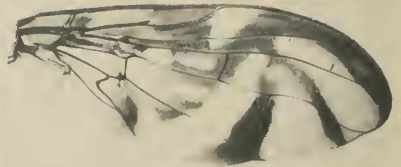
2 DISTINCTA ♂



8 PANAMENSIS ♂



3 LUDENS ♂



9 PASSIFLORAE ♀



4 ZETEKI ♀



10 LEPTOZONA ♀



5 SIMILIS ♀



11 PALLENS ♀



6 BRAZILIENSIS ♂



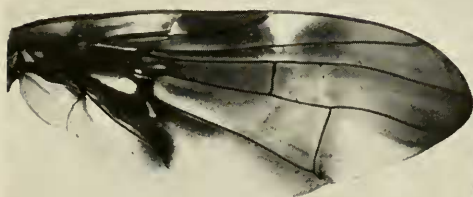
12 PUNCTATA ♀



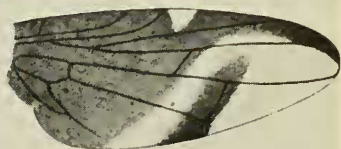
1 HENDELI ♀



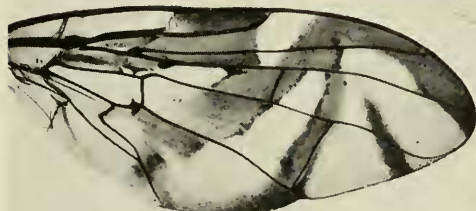
6 NIGRIPALPIS ♀



2 OBSCURA ♂



7 BIVITTATA ♀



3 HAMATA ♂



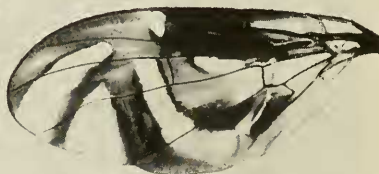
8 OERESIA ♀



4 TRIPUNCTATA ♀



5 SYLVICOLA ♀



9 CRYPTOSTREPHA ♀



1 URICHI ♀



6 FLAVIPENNIS ♀



2 TRINIDADENSIS ♀



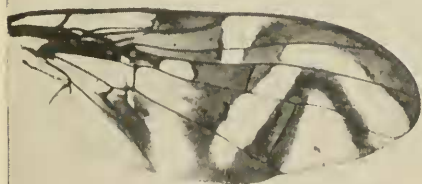
7 ETHALEA ♀



3 ACIDUSA ♀



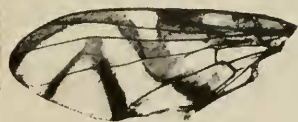
8 OBLIQUA ♀



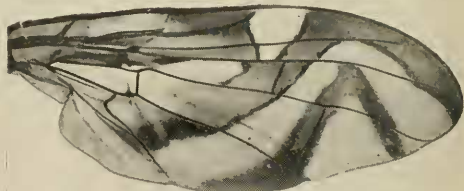
4 LAMBDA ♀



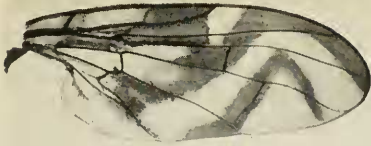
9 PSEUDOPARALLELA ♀



5 FRATERCULUS ♂



10 TOWNSENDI ♀



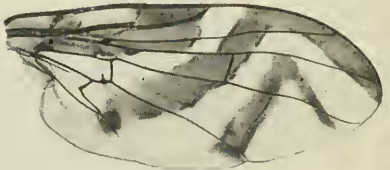
1 PALLIDIPENNIS ♀



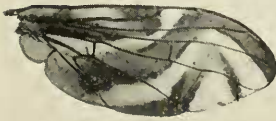
6 SOLUTA ♂



2 BARNESI ♀



7 CONSOBRINA ♀



3 CHICLAYAE ♂



8 PARALLELA ♂



4 INTEGRA ♀



9 SCHAUSI ♂



5 CONCAVA ♂

Plate 21.

1. *Anastrepha hendeli* Greene, female (type) (Sao Paulo, Brazil).
2. " *obscura* Aldrich, male (paratype) (Trinidad).
3. " *hamata* Loew, male (Brazil).
4. " *tripunctata* Van der Wulp, female (type) (Mexico).
5. " *sybicola* Knab, female (paratype) (Trinidad).
6. " *nigripalpis* Hendel, female (type) (Bolivia).
7. " *bivittata* Macquart, female (locality unknown).
8. " *ocresia* Walker, female (type) (Jamaica).
9. " *cryptostrepha* Hendel, female (type) (Peru).

Plate 22.

1. *Anastrepha urichi* Greene, female (type) (Trinidad).
2. " *trinidadensis* Greene, female (type) (Tabaquite, Trinidad).
3. " *acidusa* Walker, female (type) (Castries, St. Lucia, B. W. I.).
4. " *lambda* Hendel, female (type) (Peru).
5. " *fraterculus* Wiedemann, male (type) (Sao Paulo, Brazil).
6. " *flavipennis* Greene, female (type) (Boa Vista, Brazil).
7. " *ethalea* Walker, female (type) (Hermitage, Trinidad).
8. " *obliqua* Macquart, female (Barro Colorado Isl., C. Z.).
9. " *pseudoparallela* Loew, female (Trinidad).
10. " *townsendi* Greene, female (type) (Boa Vista, Brazil).

Plate 23

1. *Anastrepha pallidipennis* Greene, female (type) (Medellin, Colombia).
 2. " *barnesi* Aldrich, female (type) (Cayuga, Guatemala).
 3. " *chiclayae* Greene, male (type) (Chiclaya, Peru).
 4. " *integra* Loew, female (Trinidad).
 5. " *conca* Greene, male (type) (Cano Saddle, Canal Zone).
 6. " *soluta* Bezzi, male (Sao Paulo, Brazil).
 7. " *consobrina* Loew, female (Brazil).
 8. " *parallela* Loew, male (Sao Paulo, Brazil).
 9. " *schausi* Aldrich, male (type) (Juan Vinas, Costa Rica).
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